TOWARD HEALTHY SOCIETY :

Healthy Public Policy and Health Impact Assessment in Thailand

by

Healthy Public Policy and
Health Impact Assessment Program

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Toward Healthy Society:

Healthy Public Policy and Health Impact Assessment in Thailand

Healthy Public Policy
and Health Impact Assessment Program
Health Systems Research Institute

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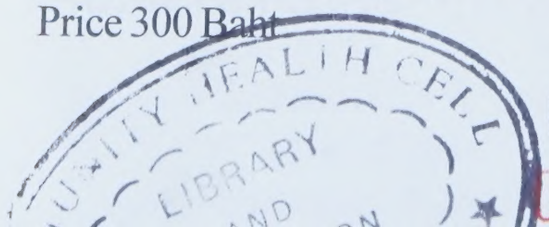

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Preface

As defined in Ottawa Charter, health is seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal life, as well as physical capacities. That means health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being of individual, society, global community as a whole. This also reorients the mission on health promotion. It is not limited within health care. Instead, building of healthy public policies in non health sectors which have a significant impact on health and strengthening community action to achieve better health are given the first priority.

With the above new paradigm of health and reoriented mission of health promotion, Research and Development Program on Healthy Public Policy and Health Impact Assessment (HPP-HIA Program) under Health Systems Research Institute (HSRI) established in 2001, as one of organizations in promoting health in non-health sector, has made high advocacy in conveying health dimension into the development process in various sectors but at all levels. The development of Healthy Public Policy (HPP) using Health Impact Assessment (HIA) as a critical tool is the main task to ensure that the expanded values of health in terms of physical, mental, social and spiritual dimensions are taken into account and public policies are promoted in the way to meet healthier society.

In fact, the concept on HIA for HPP is not originated in Thailand. It is the idea adopted from the international experience. However, the development of HIA for HPP in Thailand has been consistently adapted and adjusted in order to map out the model development which is appropriate to Thai context. The adjustment has been carried out through conducted researches and activities in form of social experiment.

During the last three years, many researches and activities on HIA have been applied to various policies for enabling people to increase control over and to improve their health. For example, HIA is conducted to promote the sustainable management in energy, agriculture and water resource sectors. Such knowledge accumulation not only entailed comprehensive understanding on the link of health and socio-economic and political environments in the broader society, but also learning process encouraging people to take action on protecting their right to lives in the healthy conditions. In the other words, civil empowerment through knowledge building is the fruitful of HIA for HPP.

After three year of HIA and HPP introduction into the social domain, it is found that Thai society gives a strong welcome to HIA for HPP because it presents the clear and sound evidence on various dimensions of health impacts and greatly respects different values of health from all stakeholders leading to the reconciling social conflict. However, HIA for HPP is still a new concept for Thailand, it requires further development for serving the increasing demands of the society on applying it for health

protection. Therefore, the reflection on our performance in the last three years is essential not only for planning ahead on the direction of HIA and HPP for health promotion, but also for providing a big picture on the success and the failure of HIA and HPP development to bring about healthier society. Certainly, the result of these synthesis papers will help us upgrade our practices and capacity in implementing HIA for HPP.

The experience in HIA and HPP process reflected in this book does not only benefit to domestic HIA practitioners but also international ones because it implies a key jigsaw required to complete healthier picture for the society. In addition, obstacles to the adoption of the healthy public policies in non-health sector identified in this book could help HIA international practitioners particularly the developing countries with similar socio-economic and cultural contexts as Thailand have, produce the strategies on promoting new health paradigm in their countries by using our experiences as a guideline. Furthermore, we believed that whenever knowledge and lesson learnt are shared in the international communities, to see the bridge for international collaboration in developing HIA to serve HPP at all aspects is not far away due to the mutual understanding on HIA and HPP development in the specific context.

This international standard book consists of three parts. The first part focuses on the formation of HPP-HIA development in Thailand. The principle and concept of HPP and HIA also presented, as well as the lesson learnt on raising HIA and HPP for generating healthier society.

The second part refers to the experiences in analyzing public policy process to serve HPP-HIA development. Applying Health Impact Assessment to promote healthy public policy is less effective without clear understanding of public policy processes. However, in the real world, public policy processes are multi-facets and less predictable. Several HIA studies in Thailand cannot lead to satisfactory policy outcomes, due to the lack of insights on public policy process.

The last part refers to the experiences in HIA application through 8 case studies in five thematic sectors– industry, energy, agriculture, water management, international relations. Some cases apply HIA as a tool to solve or to cushion the social conflict and to support the emergence of Healthy Public Policy. Meanwhile, some cases reflect HIA in various dimensions such as local empowerment and knowledge management. However, all case studies aim to point out the significance of HIA and HPP as an integral part in supporting Thailand's health system reform and HIA/HPP development in developing countries.

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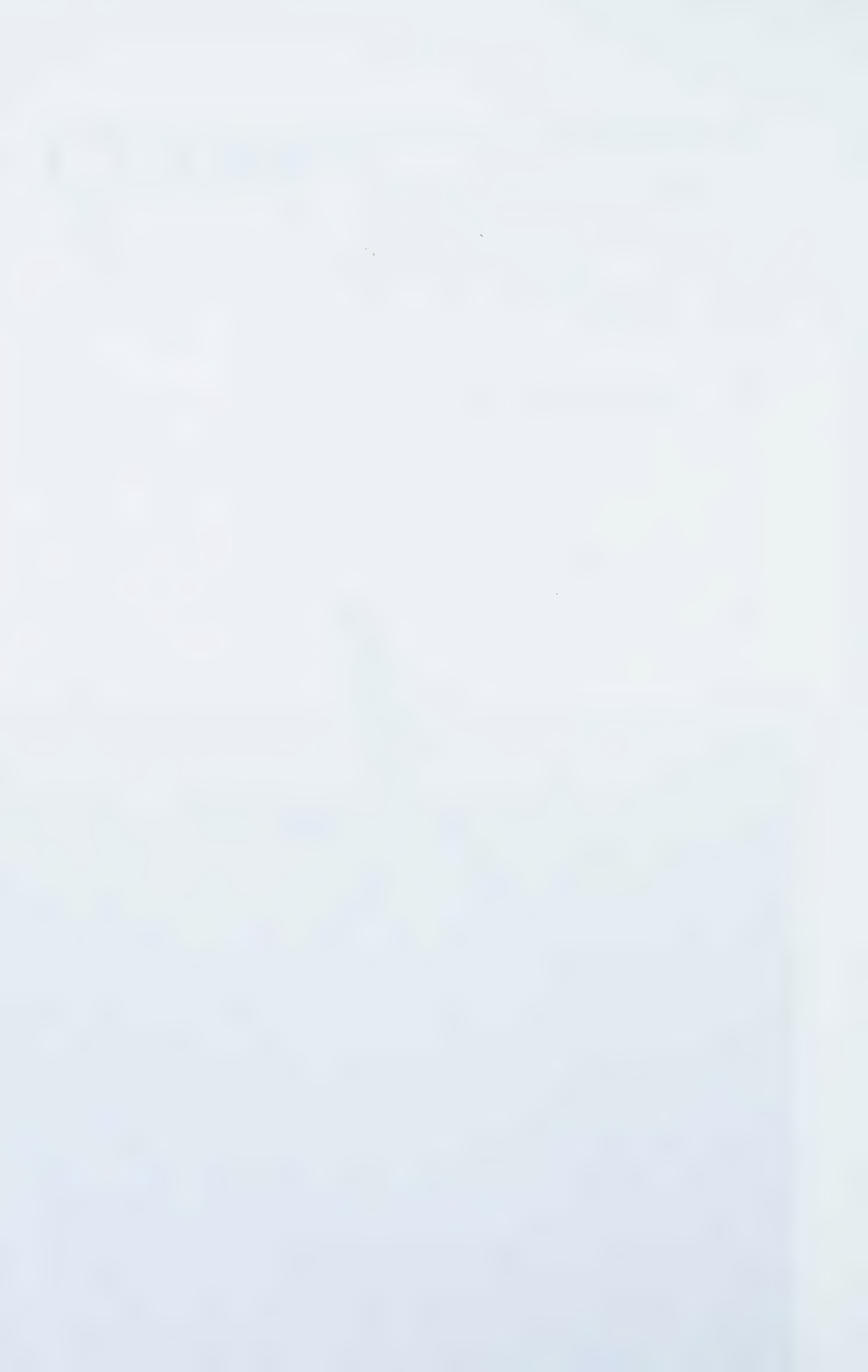
List of Acronyms and Abbreviations

AFTA	Asean Free Trade Area
AOP	Assembly of the Poor
APEC	Asia-Pacific Economic Council
APPC	The Asia Pacific Potash Corporation
ARP	Asia Pacific Resources
ASEM	The Asia Europe Meeting
BMS	Bristol Myers Squibb
BOP	Balance of Payment
CBA	Cost-Benefit Analysis
CL	Compulsory Licensing
DMR	Department Mineral Resources
DSM	Demand side Management
EGAT	Electricity Generating Authority of Thailand
EIA	Environmental Impact Assessment
EIC	Environmental Information Center
EU	European Union
FAO	Food and Agriculture Organization
F.O.B.	Free on Board
FTA	Free Trade Area
GAP	Good Agriculture Practice
GATT	Agreement on Tariffs
GDH	Gross Domestic Happiness
GDP	Gross Domestic product
GMP	Good Manufacturing Practices
GMS	Greater Mekong Sub-regions
GSP	Generalized System of Preferences
HELI	Health and Environmental Linkage Initiative
HIA	Health Impact Assessment
HPP-HIA	Healthy Public Policy and Health Impact Assessment
HSRI	Health System Research Institute
HSRO	Health System Reform Office
IAIA	International Association for Impact Assessment
IMF	International Monetary Fund
IPM	Integrated Pest Management
IPR	Intellectual of Property Rights
ISAC	Institute for Sustainable Agriculture Community
ISO	International Organization for Standardization

ITCSD	International Center for Trade and Sustainable Development
MoNRE	Ministry of Natural Resources and Environment
MOPH	Ministry of Public Health
NGOs	Non-Governmental Organizations
NHRC	National Human Rights Commission
NHSRC	National Health System Reform Committee
NN	Nam Phong
NP	Nakorn Nayok
OEPP	The Office of the Environmental Policy and Planning
PCD	Pollution Control Department
PDP	Power Development Plan
RTG	Royal Thai Government
SEA	Strategic Environmental Assessment
SENT	Sustainable Energy Network for Thailand
SIA	Social Impact Assessment
SWOT	Strength, Weakness, Opportunity and Threat
TAOs	Tambon Administrative Organizations
TRF	The Thailand Research Fund
TRIPs	Trade Related Intellectual Properties Rights
TSP	Total Suspended Particle
TSTI	Thailand Science and Technology
UIC	United Infrastructure Company
UK	United Kingdom
UN	United Nation
URU	Ubon Ratchathanee University
USTR	United States Trade Representative
WHO	World Health Organization
WTO	World Trade Organization

PART 1



Thailand's Initiative Process of "Health Impact Assessment"

Wiput Phoolcharoen MD., MPH.

Growing concern of being risk society has been obviously expressed in current Thai society. Since the economic fluctuation has profoundly impacted to the societal wellbeing which has been impressively witnessed in the second half of the last century. This caused from dramatic development in transitional economy from former agrarian society into newly industrialized country and enjoyed an exceptionally high growth rate over 20 years from the 1960s to 1980s. The national gross domestic product (GDP) has exhibited continuous growth averaging over 7 percent per annum, peaking at over 10 percent per annum from 1988 to 1990. This sustained economic growth was achieved predominantly by rapid industrialization, an increase in foreign investment, tourism, and a growing export-oriented manufacturing sector. The exceedingly rapid growth was estimated to generate a fourteen-fold increase in the national income and an average eight-fold increase in per capita income over the two decades from the mid 1970s to mid 1990s. Aggressive government policy towards industrialization was increasingly influenced by the global political economy. Thailand's successful growth-oriented economic strategies relied heavily on foreign capital inflows and foreign investment. In 1997, the overheated economy of Thailand abruptly melted down. The government was forced to devalue the currency against the US dollar and was compelled by the severity of the crisis to enter into an economic recovery agreement, providing US$ 17 billion under a stand-by arrangement with the International Monetary Fund (IMF).

However, the economic crisis had a positive side since it became clear that the crisis facing the nation in fact had its deepest roots in corrupt

politics. The growing middle class who, over the prior two decades, had prospered as never before, saw their wealth evaporating in front of them, vigorously demanded political reformation. Middle class white collar workers gathered in the streets demanding political change. The new constitution drafted by an independent assembly, despite proposing various progressive measures which would cripple the power of those who presently enjoyed their political privileges, was approved by the House of Representatives. This new constitution, dubbed the "People's Constitution", provided for drastic change in the Thai political landscape and began a new era of citizen's participation and deliberation in political affairs.

Thailand has recognized the consequence of any development policy and has tried to assess its impact to the people. This was initiated from the ecological concern, then to the individual human being and finally extended to cover the social impact and public domain. Health impact assessment (HIA) was firstly applied as a minor technical element in the environmental impact assessment. As human centered development has been increasingly concerned, the HIA has turned to be an attractive tool to reconcile the societal conflict in the midst of drastic economy development.

1. First footstep of impact assessment

In Thailand, health impact assessment has been initiated as an integral part of the environmental impact assessment (EIA), which aims to be technical tool for appraisal and approval of project especially construction and industrialization. Environmental impact assessment (EIA) was firstly introduced in 1981, but it was not until 1985 that it was launched throughout the country. During this initial period, EIA was known and understood within a small circle of government officials and academics. The Office of the Environmental Policy and Planning (OEPP), Ministry of Science, Technology and Environment was responsible for reviewing EIA and building capacity of all parties concerned.

In line with the strengthening of the civil society, the 1992 Environment Act introduced a minor change in the EIA review system. EIA is now reviewed by EIA review panels consisting of governmental officials and external experts, most of whom were academics, university lecturers. Their technical expertise as well as their non-partisanship has played an

important role in strengthening the EIA review system.

In spite of this development, EIA remain largely a very exclusive affair. The emphasis on technical issues, the lack of public participation, and the detachment of the EIA process from project planning and development, and long record of dismal enforcement, make EIA very inaccessible and almost irrelevant to the general public.

Over years, the public have become more familiar with EIA system and started to demand a better and more open process. Dam and irrigation projects were the first to be severely criticized, partly due to the fact that environmental NGOs – the most vocal critics – were the strongest groups, and were able to expand their network and alliance widely.

The most severe criticism of dam and irrigation EIA is on the social impact assessment (SIA) and public participation. Public discontent with EIA led to the OEPP's attempt to add more emphasis on social impacts and public participation. This endeavor has, nevertheless, been constrained by the existing legal and institutional framework.

By the large, the mismatch between the 1997 Constitution that endorses far-reaching people's and community rights, and the existing system based on the old legal, procedural and operational standard, has made this transitional period a difficult and frustrating time for all parties. Many institutional changes have to be made before these rights can be effectively realized. But changes have been sluggish and failed to keep pace with rapid development in project development and project opposition. As a consequence, a large number of projects have experienced delays and conflicts.

Despite their many pitfalls, great expectations is still unrealistically and unfairly put on EIA policy and area planning issues, supposedly discussed and settled before the project-level EIA, are expected to be dealt with at this stage. As a consequence, EIA is caught in the eye of storm; it became the center of controversies contention and conflicts. Unfortunately, mechanism that is supposed to help manage conflicts such as public hearing has been badly mishandled. Today, project developers, project opponents, and Thai people in general do not have a favorable view of EIAs. Increasing disappointments have led to a legitimacy crisis.

2. Health system reform towards healthy public policy

Even though Thailand's overall health status has improved immensely from the 1970s to 1990s, evidence of failure in the health system's performance was observed. Although, the lack of a sound evaluation of past policy had obscured these drawbacks in the system, four major critical issues were publicly acknowledged as key factors to consider reconstructing the health system. These underlying problems are higher cost of health expenditure, health deterioration from unbalanced economic development, rapid technological evolution with increasing inequity and political and social reform.

In the meanwhile, the new constitution (1997) established an enormous opportunity for further progress in restructuring the relationships between the state and civil society; in making the development process more democratic; and in creating new institutions and mechanisms that provide greater accountability, transparency, representation and participation. Initiatives in these areas take their roots from the laws and are guided by far-reaching principles pertaining to basic human rights. It is of utmost importance that these opportunities are fully exploited and remain central issues in the policy and reform agenda. Their full and effective utilization will allow civil society organizations to continue to flourish and serve as a positive force for change as well as enable them to function more effectively to counter the negative effects of globalization.

The new constitution has paved the way for the re-orientation of health and its relation to the general public. It stipulated that health is a human right, which must be protected by the state. This is the first time that an egalitarian view towards health has been expressed in Thai political philosophy. More specifically, health entitlement was introduced for a wide range of the disadvantage members of the population, i.e., the elderly, the disabled and abandoned children. Political reform, therefore, calls for a re-examination of the health sector's role and way of operating, with concern for social capital as well as financial capital. To achieve the requirements stipulated in the new constitution, the public sectors have to re-orient their vision and missions to comply this new demand on health

and health care.

Based on hardcore evidence of the need for change, the Royal Thai Government (RTG) opted to set forth on the complex mission of incorporating whole sectors of Thai society into the monumental civil reform process instead of just addressing issues of some government programs. This initiative public process has been going on for such a long time that a majority of the reform alliances have envisioned that the result would lead to the establishment of a health system that would effectively serve Thai society in the new millennium. It would serve as a conduit for researchers to link up with alliances in the policy process to design and engineer the new structure, role and functions of the revolutionary health system. In conclusion, the critical two intrinsic aims of the reform process are to clarify the new ideology of the health system and to identify as well as develop new infrastructures and mechanisms that would lead to the sustainable wellbeing of the citizens of Thailand.

In the year 2000, a decree announced by the Office of the Prime Minister has set up the National Health System Reform Office (HSRO) to coordinate broadly participatory endeavors from all sectors as mechanism to reform the health system. The rationale for reform was witnessed as:

"Presently, the national health system is incapable of bringing about an acceptable level in people's health and quality of life. The situation is in discord with the spirit of the national constitution. Action should be undertaken to reform the nation's health system in order to strengthen the quality of the health system and contain cost, and to draft a bill that will be the main legislative framework for the reform."

Two strategic objectives were mandated: restructuring institutional arrangements through legislative action, and forging a new collective health consciousness in Thai society. The decree proposed a National Health System Reform Committee (NHSRC) chaired by the Prime Minister with the HSRO as secretariat to oversee the reform process. This turned to be knowledge-based social movement to support public rethinking and restructuring of the health system. It was primarily aimed to enact within 3 years the National Health Act as a gateway toward envisioned health system reform. Since, the legislative and public hearing process has been affected very broad stakeholders, the term for drafting the

law was renewed to be continuing to the year 2006.

Based on the of National Health Act draft, healthy public policy is a fundamental part of proposal to reform and reduce health impact which affect from public policy. Culminating from deliberations towards health system reform, healthy public policy has been stated as a strategic foundation to create a healthy pace for all life. Evidence from the experiences of civic movements from grass root level, through local level, up to national level has demonstrated a more effective and knowledgeable involvement of public policy. Healthy public policy describes a broad process, which recognizes that most factors influencing health outcomes lie outside the health sector. It is characterized by an explicit concern for health and equity in all areas of policy development and implementation. In addition, the impacts of actions falling outside the health sector, such as housing, environment, income assistance, and the livelihood, are recognized politically as impacting on the health of the population. There is compelling evidence to show that the health of the population has less to do with health care spending than with other social, economic, and environmental factors.

3. Health Impact Assessment as foundation of healthy public policy

In 2000, the NHSRC proposed a research on healthy public policy to be fundamental principle of the National Health Act. According to this proposal, the health impact assessment (HIA) has been introduced as a creative tool for Thailand's future development. The Health Systems Research Institute (HSRI) launched an HIA research and development programme to support the reform since 2001. Its first step was the review of HIA experiences in some selected countries, from which HSRI identified two basic platforms of HIA development that are very crucial for Thailand to consider.

First, HIA can be developed as an additional part of the Environmental Impact Assessment (EIA) process, by focusing more on health as a holistic approach. This approach implies that HIA becomes an approval mechanism under the umbrella of the EIA process, which can be seen in Canada and New Zealand. The scope of HIA applications is mainly

concentrated at project level.

Secondly, HIA can be developed as an essential tool for influencing healthy public policy. This is experienced in the Netherlands and the United Kingdom, both of which aim to use HIA to tackle inequalities in health. HIA in this platform is recognized as a participatory learning process rather than an approval mechanism. It does not provide the answers but, rather, provides recommendations to decision makers, supported by strong evidence.

Initially, most of researchers and local communities in Thailand tended to prefer the first platform, since it can provide the authority for accepting or rejecting a project proposal. However, the practical weaknesses of this approach in Thai context have been gradually recognized. Since, the EIA is a legal mandate under the environmental protection Act. To implement HIA with a broader scope of participation, the existing EIA process would need to be changed, which is complicated to achieve politically. Thus, a proposal to amend EIA law might encounter strong political opposition and trigger an offense against the whole movement of health system reform. On other hand, HIA has been newly developed in Thai society in last few years. Thus, HIA that still be without adequate knowledge, experience, and human resources, may be highly exposed to political abuses of its process if it becomes a premature formal project approval mechanism.

Finally in August 2002, the NHSRC decided to opt the second alternative of HIA development to cover boarder ranges of the public policy process, both in terms of level and area. It will also support political acceptance of the whole concept of national health system reform, as well as allow the development of a critical mass of HIA knowledge.

Consequently, the Health Systems Research Institute (HSRI) granted a 3-years fund during 2002 to 2004 to launch a program called "Healthy Public Policy and Health Impact Assessment Programme (HPP-HIA)" as an action research plan. The programme aimed to study and develop HIA concept and instrument as an integrative ingredient of policy process. This needs to drive and align chaotic collaboration among researchers from diverse institutes, civil society activists, and government sectors' officers so that human centered development can become true.

Base on the HPP-HIA's experiences with broad networking of wide

range stakeholders, the HIA is on its progression. The lesson learnt may be concluded into two main levels – the national and local level.

3.1 HIA for the national policy

Reform of the national health system was conducted along side the drafting process of the National Health Act, which can be seen as an essential means to mobilize all stakeholders to collaborate with each other in redesigning a new mindset for their health system. Although the Act has not yet been finalized, the draft depicts vividly the core and essential structure of the desired health system. Health is stated as the ultimate goal of development and the dignity and basic human rights of all people, and has been redefined as "a state of wellbeing in four aspects: physical, mental, social, and spiritual". The rights and responsibilities of individuals, the community, local government, and central government in promoting and protecting health are well established. All determinants of the health equality and security have been defined in categories such as food security, economic security, social security, political security, and health care security.

The new governance structure in the health system has been introduced with two main new institutions: the National Health Assembly, as a forum for discussion where people may express their views and aspirations regarding health, and the National Health Committee, as the coordinating body to provide recommendations on national health policy and strategy. The concept of healthy public policy has been developed to ensure that any public policies will take health into account. At the same time, development of the HIA process is an important tool for participatory learning of policy process.

The movement for the National Health Act was strategically diverted into two main efforts. Firstly, since the draft was scrutinized by the government's committee for 2 years, 100,000 citizens submitted the draft of the law as a petition to the parliament to initiate its legislative process in 2004. Secondly, the draft of the National Health Act, which was submitted to the Prime Minister since 2002, is currently amended and approved by the Commission of Jurisdiction (in 2005) and will be scrutinized in the House of Parliament in next legislative round. Thus, by the end of 2005, the legislative process of the National Health Act will be under-

taken in the parliament.

In parallel, the National Health Assembly in 2003 submitted its recommendation on the application of HIA to the National Economic and Social Development Advisory Commissioners, in which after a period of study requested the government to draft the Health Impact Assessment Act. The recommendation was endorsed by the government cabinet in 2005 and has been in the initiative process of drafting the Health Impact Assessment Act.

3.2 HIA for local empowerment

Since 2003, the HPP-HIA has organized three forms of related implementation bodies. First, an HIA coordination team was organized to manage all supportive activities in order to develop information, learning opportunity, and knowledge. The second organizations are three regional networks with the roles in support the learning process and accumulation of critical mass of researchers and community activists in the local spheres. Lastly, five thematic networks have been developed in order to create a bridge between sound evidence and public policy formulation in five principal policy issues. As a result, there have been more than 50 HIA case studies undertaken in various localities in the country. The participants compose of broader stakeholders without restriction to only technician specialists.

In Thailand, the design of HPP-HIA was aimed to strike a delicate balance between professional and technical against the community and traditional approaches. As HIA assesses impact of hazard and risk on the people, it involves working with complicated scientific methodologies on one hand, and dealing with people who do not have such technical background but rational and irrational perception and feeling on the other. At present most of the impact assessment tools express their aims towards the first at the expense of the latter, resulting in misunderstanding and mistrust. To bridge the societal gap, HIA should be developed in terms of simple methodologies so that it can be elucidated and widely understood and accepted.

Accordingly, HIA has to be developed to keep pace with evolving social context. It should bring about positive impacts on the people especially the victims and the vulnerable populations. This underlies the neces-

sity to empower people and public in policy process involvement rather than provision of misinformation, irrational fear and helplessness. Within the HIA network, there may be both idealist who expect comprehensive and full-fledged HIA and strategist who search for just a practical tool. Thus, mutual learning atmosphere has to be constructed to allow the enabling environment for joint development of each locality's culture based HIA. This reflects a beneficial role of HIA on the local empowerment whereas at a local scene, there may be various development programme being taken place. As a consequence, the balance between HIA and other local agenda is worth considered in order to reconcile with ongoing activities that require people's participation and responsibilities, especially those related to decentralization and local government.

Inevitably, HIA would be portrayed or expected to be another conflict management mechanism. Understanding and compassion to the adversely affected groups could bring opposing interest groups together. But HIA also has a tendency to bring more contending issues to the forefront. This calls for capacity development in conflict management. Finally, HIA should lead to institutional, policy, behavioral and attitudinal changes. It should also be manageable and cost-effective for policymakers, the parties concerned, and most importantly, the people. Amid many important ongoing changes, it is not realistic to expect the society to invest a great deal of energy and resource without a prospect of concrete and worthwhile returns in a foreseeable future.

4. HIA as governmental infrastructure

The health system reform process since 2000 has allowed the members of diverse social sector to share their aspiration for the country's health system. Then it has ignited the public concern and instilled the society with a visionary health system. In the meantime, the public sector reform had demanded for renewal of the mission and infrastructure of the Ministry of Public Health. The core sense of novel roles and functions of deliberative health system was thus integrated as core components of the Ministry in the process of MOPH's restructuring. As a result, the "Health Impact Assessment" was addressed as a principal role of the Department of Health as well as the "Health Hazardous Control" was imposed as a crucial role of the Department of Disease Control.

In addition, restructuring of the government's health authority mandated to gear up for the reform has been undertaken. The Health Promotion Fund was established in 2001 to mobilize 2 percent of the tax from the sale of alcohol and tobacco for the health promotion movement. In 2002, the Health Security Office was launched to implement the government's policy of universal health-care coverage. This was followed by the 2003 restructuring of the Ministry of Public Health, which reoriented its role and functions with regard to the new mandates in the evolving health system.

In line with this ongoing reform, innovative roles and functions of the health system were introduced. The health governance system was a key function imposed under the National Health Assembly in the draft National Health Act. Health promotion is a stated government policy as institutionalization of the Thai Health Foundation. Control of health hazards has been integrated as a new function of the Department of Disease Control. The health service system has been reoriented under the government policy of providing universal health coverage or the "30 baht scheme". Consumer health empowerment with regard to food safety has been placed on the national agenda.

The policies and strategies of the health system in Thailand demonstrate the progress that has been made not only in the control of disease or delivery of health services, but also in the extension of philosophical concern to broader relevant sectors. This affirms a willingness to consider a wider perspective of the country's strategic plan in terms of "human-centred development" that addresses health as a cross-cutting issue in which all sectors participate.

5. Future prospect

Since 1997, Thailand has striven to apply the constitutional spirit into practice and action. Wide-ranging reform is being made in the area of education, health and public administration. The essence of this reform is to decentralize important decision and function to local administration and local communities. The Decentralization Act 1999 sets targets and time frame for all public agencies to devolve authority and responsibilities to the local level. The decentralization drive certainly has important impacts on the HPP-HIA as decision about local policy and project development.

The Health impact assessment as a basis for healthy public policy would be well accepted and be integrated into Thailand's health system in the midst of ongoing political reform. The development and application of different perspectives of HIA as well as the integration of scientific and local evidences still need further study, both in individual HIA case studies and in general HIA guidelines and training courses.

Currently, one of the most important obstacles to HIA development is incomplete and dispersed information on health status and environment indicators. Thus, investment in databases and information systems has become a priority for HPP-HIA since 2003, to reduce the costs and time needed for HIA implementation. Another critical point of HIA development in Thailand is the effectiveness of influence in public policy processes. HPP-HIA has also planned to develop its conceptual framework and training courses for "healthy public policy advocacy". As establishment of new governance structures under the health system reform has designed a policy arena for the healthy public policy process, it confirmed the necessity for the HIA as an effective policy instrument. Therefore, coordination and cooperation between the development of HIA and new governance structures is absolutely critical.

At this moment, Thai society has redefined health and the health system to lead a capable envisaging of holistic scope for the health system. The process of drafting the National Health Act is only an initiative step in a long journey of ongoing reform, which demanded the use of sound knowledge to arm public policy towards health concerns. Thus, a learning society inspired with an aim for healthy environment and peaceful society is, in itself, a means and an end for health system reform.

The key success factor of the HIA development is the involvement of all stakeholders from the multitude of parties. Even though the government sectors has been identified as the main users of the HIA process, the academic community and civil society have been recognized as a firm ground on which to drive healthy public policy. Consequently, the transformation of technical knowledge into system changes has to be legitimized under the endorsement of both civil society and the government. This might be the first time in Thailand's history of public policy that academicians have been enlisted to work side by side with political powers and civil society.

Change is needed, not only in the HIA process, but also in related policy and project development process. As national and local governments as well as civil society are assuming a larger and more meaningful role, it is essential that the new system and process align with the new institutional framework and the people's expectation.

The Contribution of HIA Development to Healthy Public Policy Formulation in Thailand

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"Knowledge of some subjects, like math, requires only a good theoretical mind.
Knowledge of others, like love, requires experiences. ....
Politics and public policy are more like love than math."
Steven E. Rhoads, 1995; p.215

After three year of introduction, the question on "how does HIA development in Thailand contribute to the formation and advocacy of healthy public policy?" has been echoed, both domestically and internationally. In fact, it is a necessary reflective answer with a perfect timing, since HIA development in Thailand will be end the first three-year phase in 2004. The answer to this question will certainly pave the ways for the second period with the confirmation or redirection of its approaches, strategies, and tools.

However, it is quite difficult to provide exact answer right now. Since the policy changes depend on various factors and evolve all the time, they need a long period of time to be observed. It also needs a critical mind to analyze the causes and effects of policy changes (or stability). The author, as one of the main actors in HIA development in Thailand, may not

be appropriate to claim such a critical mind. Therefore, please take this paper as a preliminary observation from the insiders, who try to look back through the evolution and expectation of HIA development in each period of time and provide some observations on its contribution to healthy public policy development in this country. The finding from this paper should be re-evaluated through a reflective and empowerment evaluation process, held in the year 2004.

This paper will be divided into four main parts. The first part will concentrate on the formation of idea for HIA development. This part aims to show the evolution of idea in HIA development, which certainly determines how HIA should perform in public policy arena. The second part will provide the observations on HIA implementation and participation in healthy public policy process. Then, the conclusion of how HIA can contribute to healthy public policy arena will be presented in the third part. The recommendation for further development will be the last part of this paper.

1. The Formation of Idea

The idea of how HIA should contribute to Thai society, have been changed and developed during its developmental period in Thailand. It is quite interesting to describe and analyze these dynamics, since it can provide the important fundamental reasons for the success or failure of HIA development in Thailand, which may happen now or even in the future. In general, there are three different ideas of HIA roles in public policy process, emerged during this development period. (See the historical development of HIA in Thailand in Box 1).

1.1 HIA as Public Screening Process (2000-2001)

HIA was firstly introduced in Thailand in 2000 during the process of formulation the core concepts of the National Health Act, which aims to be the engine and tool for National health system reform. At first, the initial idea of introducing HIA was to establish more accountable, transparent, participatory, and human-centered approach of impact assessment

as one of public screening tools. This was unsurprisingly the reflexive effect from the ineffective and unaccountable existing EIA process. However, the formation of this idea certainly followed the principle of Thailand's constitution and the aims of the National Health Act, which acknowledge the rights of people to protect human health from the impacts of development activities.

The attempts during this period were to a) develop more accountable, transparent, and participatory HIA process, b) provide public information on HIA outcomes through case studies, and c) establish an independent institution, including organizational structure, which can facilitate and regulate HIA development under the National Health Act.

According to this idea, some fundamental principles of public participation in HIA process, like public scoping and review, and some methodological tools have been developed and still applied up to now. The HIA institutional design has been presented and accepted by National Health Assembly and National Health System Reform Committee as presented in the draft of the National Health Act (for detail see Wiput Phoolcharoen et al, 2003). One of the prominent examples is the strong mutual support between National Health Assembly and HIA, which also introduced and established during this period and still applied up to today.

However, it is important to note that, as public screening tool, HIA during this period were unintentionally focused mainly on the project level or very specific policies or cases. The link between HIA process and the policy arena was also out of focus. The strong hope of successful HIA development was also still relied on the shoulder of reliable academicians, rather than shared within the society.

Box 1: HIA Process in Thailand

Time	Event
August 2000	The drafting process of National Health Act was formally started
October 2000	The concept of healthy public policy was firstly presented in the drafting process of National Health Act
January 2001	The concept of HIA was firstly presented in the drafting process of National Health Act
March 2001	HIA Research & Development program was started
May 2001	Four HSRI researchers participated the annual meeting of International Association of Impact Assessment in Colombia
July 2001	The first three case studies was presented in public forum
September 2001	The concept of HIA and case studies was introduced and presented in the demonstration of National Health Assembly
October 2001	The first HIA regional network was set up
December 2001	HSRI organized HIA international workshop in Chiang Mai
January 2002	The first HIA thematic network was set up
March 2002	The forum of health affected community was organized to provide comment on HIA concept and implementation
May 2002	The first HIA annual meeting with the participation of all HIA networks
June 2002	Five HIA papers was presented in the annual meeting of International Association of Impact Assessment in the Netherlands
August 2002	The first two HIA training courses was introduced and conducted, mainly for local communities and researchers
August 2002	The first HIA guideline was introduced
August 2002	National Health Assembly accepted HIA as one of core element for the National Health Act
October 2002	Division of Community Sanitation and HIA has been established under the Department of Health, Ministry of Public Health
December 2002	The Center for HIA training has been established at Mahidol University
January 2003	The policy targets for each thematic network and the framework for participating in public policy process was firstly introduced
April 2003	HIA presented its development concepts and experiences to committee for EIA reform in Thailand
June 2003	Four HIA papers was presented in the annual meeting of International Association of Impact Assessment in Morocco
August 2003	National Health Assembly organized two main discussion forums on "Healthy Public Policy" and "Agriculture for Healthy Life", with the main input from HIA network
November 2003	The SEA workshop was held by international resource persons, both for high-level decision-makers and for academic and operational level
December 2003	The second international HIA workshop is planned to be organized by HSRI in Rayong
December 2003	The process of empowerment evaluation will be started, in order to provide the direction for the second development phase

Source: Modified from Wiput Phoolcharoen et al, 2003.

1.2 HIA as an Informed and Democratic Decision-Making (2001-2002)

Due to the limited impacts of HIA in policy level, as well as, the intellectual influences by international HIA discussion during IAIA conference and HIA international workshop in Thailand, HIA development in Thailand was started to move beyond public screening process. During this period, it started to shift its focus from only academic accountable and reliable process to also socially and politically effective process. The focus on policy level was clearly stressed. Since project direction and implementation was, explicitly and implicitly, determined by the policies, moving to policy level should be more effective in protecting and promoting human health. Moreover, HIA development also started to pay much higher interests in suggesting and advocating for suitable policies, rather than just waiting for screening them.

There are several implication and important benefits from this change to overall HIA development in Thailand. First of all, in order to provide socially and politically effective suggestion, the importance of timing and policy process has to be stressed within HIA process. Second, the thematic or healthy policy networks has been set up in main policy sectors to follow and analyze the policy process within each policy sector, as well as, to suggest for appropriate timing of each HIA case study. In practice, there are five policy networks formed in 2002, and all of them are still working as thematic network today. Last, but possibly most important aspect, the core values of HIA in contribution to healthy public policy formulation was firstly and formally announced, as described below.

The core values of HIA have been presented in the three components; Value, Evidence, and Resource, as presented in Box2. It is the modified version of Ison (2000).

Value. Focusing on values in Thai context means that HIA has to be process, which can bring the values of good health (in holistic manner) to be the front, or top priority, of the discussion of stakeholders and decision-making of politicians and society. This also implied that the analytical framework of each HIA case study might differ case by case,

since it has to go in the line with its fundamental core values of the analysis, agreed upon stakeholders. This goes far beyond public scoping process in the sense that, not only the discussion on which critical points has to be assessed. It is also involve the discussion on

* why they are important to our healthy life
* how important they are in our life compared and related to other aspects, and,
* Possibly the most importantly, how we can agree upon on the principles and criteria of what (alternatives) should be good for our lives.

Box 2 Thailand's HIA Core Values

HIA can contribute to healthy public policy formulation and more democratic decision-making, if these three core values have been implemented.

1. Value: HIA should place value of health in public and stakeholder concerns. It should also bring different social values of health into the public discussion, aiming to understand and greatly respect different values of health from different stakeholders. Therefore, the decision-making will be paid higher attention to health aspect, as well as, more equitable for all stakeholders due to the understanding and respectability of their values.

2. Evidence: HIA should have a capacity to present the clear and sound evidence on various dimensions of health impacts, based on the social values of stakeholders or social values. This clear and sound evidence will significantly assists the decision-makers and stakeholders to make the decision in favor of healthier solutions.

3. Resource: As a learning process, HIA should aim to mobilize the resources of all stakeholders and the resources within the society towards healthier solutions. This can be achieved, if the public awareness and consciousness in collectively self-organizing to protect and promote human health has be raised during the HIA process. It is also important that HIA should assist stakeholders to realize the available and potential resources within society, which can be redirected towards healthier direction.

Source: Decharut Sukkumnoed et al. 2002.

Evidence Although, as public screening tool, the importance of strong evidence in HIA process has been quite clear and highly recommended, the shift in idea of HIA formulation still caused some noticeable changes in this component.

First, the evidence is no longer the only top priority for any HIA assessors, since the social values and resources are now taken into account in the same level. Second, the main evidence presented and discussed in HIA process has to go hand in hand with social values behind it. This caused some changes in HIA methodology, since it needs broad perspective on health to be applied, as well as the broader approach for HIA methodology.

Although, in the National Health Act, the broad perspective has been asserted since 2000, unfortunately, the knowledge to apply this perspective with the impact assessment is not well-known and well-educated in academic and research society in Thailand. Therefore, as a result of this new formation of idea, the innovation in HIA methodology, using to search and verify the evidence derived from different social values, has become the top priority in HIA development agenda in Thailand.

Last, according to broader perspective of health and HIA methodology, HIA development in Thailand now becomes more inclusive, wider opportunity for public and civil society to join and develop it, rather than exclusive for specialists in some research or disciplinary areas.

Resource In the new formation of idea, HIA should not focus only on value and evidence, it should aim to, and have capacity to, mobilize and allocate the available and potential resources within the society towards healthier policy options. The emerging of this component leaded to two important implications and, then, its interesting consequences.

First, the idea of analyzing possibility within societal resources is now rooted in HIA. The consequence is that, HIA in Thailand should not more look at one policy or project proposal alone, but also trying to find other healthier possibility within available and potential resources.

Second, since the word "resources within the society" implies much more than state or governmental resources, it stresses the important of the "real" public policy, as the directions or frameworks guided by and for society as a whole, rather than previously focus on formal declaration of governmental policy. This leads to the consequence that by conducting and participating HIA, society can, at least, start making change, even though the government may reluctant to do so.

This is quite important consequence because, in many cases in Thailand, formal government policies come much later than the proven successes of informal social initiatives. However, it is also equally important to note that, in many cases, social initiatives alone cannot lead to satisfactory changes in societal direction without appropriate regulations from the government or without reallocating of substantial state resources towards healthier solutions. Therefore, adding this component shows the clear direction of HIA development in Thailand towards more active participation in policy process.

Overall Consequences In short, these three components become core value of HIA development and implementation in Thailand. The change in HIA idea formation in this period is really crucial for the direction of HIA development in Thailand towards broader perspective, more inclusive and open for public participation, and more active in public policy participation. Clearly, HIA in Thailand now aims to be process, "which facilitates democratic discussion and decision-making in favor of healthier solutions, with a set of recommendations based on the agreed social values, sound evidence, and available and potential resources within the society". However, as mentioned earlier, the concepts alone cannot make the thing go through, the operational knowledge is required, and will significantly determine the success of HIA development under this concept.

1.3 HIA as a tool of Healthy Public Policy Process (2003)

Although the second step of HIA idea formulation have paved the way for healthy public policy formulation, the road maps or conceptual

framework for searching the new ways was not available. This caused some problems in implementing HIA, especially with the targets to policy changes during 2002. In 2003, by the suggestion of Health Systems Research Institute, the specific policy targets for each thematic network have been set up, leading to more demand on conceptual framework in participating in policy process. Therefore, in the beginning of 2003, the first version conceptual framework has also been developed, with the influences on two main theories of public policy process; namely, a) the Multiple-Stream Framework, and b) the Advocacy Coalition Framework. (*All the core concepts of these two theories are presented in Box3*).

Box 3 The Core Concepts of Three Theories of Public Policy

Based on these three theories of public policy, Thailand's framework for HIA participation in public policy has been developed. The core concepts of these three theories are briefly introduced here.

The Multiple-Streams Framework: The multiple-streams framework was developed by John Kingdon (1984). It is also sometimes referred to the Policy Stream Approach. It views the policy process as composed of three streams of actors and processes: a problem stream consisting of data about various problems and the proponents of various problem definitions; a policy stream involving the proponents of solution to policy problems; and a political stream consisting of elections and elected officials. In Kingdon's view, the streams normally operate independently of each other, except when a "window of opportunity" permits policy entrepreneurs to couple various streams. If the entrepreneurs are successful, the result is major policy change.

The Advocacy Coalition Framework: Developed by Sabatier and Jenkins-Smith (1988, 1993), the advocacy coalition framework focuses on the interaction of advocacy coalitions - each consisting of actors from a variety of institutions who share a set of policy beliefs – within a policy subsystem. Policy change is a function of both competition within the subsystem and event outsides the subsystem. The framework spends a lot of time mapping the belief systems of policy elates and analyzing the condition under which policy-oriented learning across coalitions can occur.

The Institutional Rational Choice: Institutional rational choice is a family of framework focusing on how institutional rules alter the behavior of intendedly rational individuals motivated by material self-interest. The framework suggests the distinction among three tiers of decision-making and the relations among them: constitutional, collective choice, and operational decision. The framework also provides the elucidation of the fundamental elements that can be used for analysis of outcomes and their evaluation at any of three tiers of decision-making. In general, the framework is thus a general language about how rules, physical and material conditions, and attributes of community affect the structure of action arenas, the incentive that individual face, and the resulting outcomes.

Source: *Based on Sabatier (1999), John (1998), and Ostrom (1999).*

Within this framework, the public policy process is regarded as a continuous process with no strict beginning and end. The policy changes (or stability) comprise of four main streams (or components), which are moving independently or interdependently with others. These four main streams are a) **problem stream**, dealing with problem identification and perception within the society, b) **partner stream**, aiming for policy partner formation, c) **policy stream**, taking care of policy proposal formulation, presentation, and discussion, and d) **the political stream**, referring to the political processes and environments in making decision. (*The meaning of these terms presented in Box4*).

Only if all these four streams can move together in right direction and tempo or opportunity, then the policy changes can successfully be achieved. This task is in the responsibility of policy entrepreneurs, who should try to a) **analyze** the present and prospective situation in each stream and the interaction between these four streams, b) **identify** the actions need in each stream and **implement** them, and c) **bridge** all movements in each stream towards healthier public policy, with the rights direction, strategy and timing.

Box 4 The Framework for Participating in Healthy Public Policy Process

To participate HIA practitioners to participate in healthy public policy process, the framework for participating in the process has been developed in 2003. According to the framework, the policy changes comprise of four main streams, which are moving independently or interdependently with others. These four streams are described as followed;

1. Problem Stream: The problem stream refers to the increasing in public perception and awareness on health impacts from policy. Since public and politicians have quite limited attention to one specific issue, therefore, the problem presentation should be clear, sound, and reliable. Concurrently, the problem stream has to find appropriate approach and timing in identifying and pose the problem into the society, depended very much on socio-economic situations, shock issues, and social values and perception. The approach of problem identification also affects the initial standing point of each stakeholder, thus, it is also very important for the partner stream.

2. Partner Stream: Since the policy change is not decided by one person, but based on bargaining and learning through the discussion within the society, therefore, the partner stream is very important to articulate ideas and formulate policy proposal. This process can lead to concrete and socially attractive policy proposal, as well as, to create political sound environment for decision-making. However, usually, public policy process never ends up with unanimously consensus. Thus, the competition among different coalition groups is inevitable. Then, the strength of partnership in mobilizing social and political supports becomes crucial for policy change. It should be note that, the learning process within partnership building as well as within coalition competition should be emphasized at least as much as the bargaining side. This is because only learning process can shift and change partnership bloc and public perception in favor of healthier solutions.

3. Policy Stream: The public policy process cannot reach to a satisfactory end, without strong policy proposal on what should be the best alternatives of society based on social values, available and potential resources, and sound evidence. The learning and bargaining process under the partner stream can certainly help in formulating policy proposal. However, due to the different values within society, the policy stream usually ends up with two or three competing policy proposals rather than one unanimously solution. The competition in the policy stream to gain social and political support mainly

comprises of four competing arenas; a) fundamental back-up values, b) different views on sound evidence, c) perception and controls of societal resources, and d) symbolic political and social actions. The success in this policy stream is not determined only within this stream alone. The good relations to hot social issues in the problem stream, the strong collaboration in the partner stream, and the appropriate tactics in the political stream can also be equally important to the success within this policy stream.

4. Political Stream: Political process is quite important precondition for the success of public policy process, since the political stream can determine a) the public regulation which can frame the behavior of and empower to different actors, and b) the reallocation of state resources towards healthier solutions. Moreover, it can also influence the social perception of problem identification and the discussion on socially desirable policy solutions. Although politicians are regard as the main actors in this stream, public responses and voice can also influence the directions within this stream. Therefore, any changes in political process, including new elected politicians, new appointed minister, confidential vote, people movement and so on, can possibly lead to the desirable political outcomes, if policy entrepreneurs have effective political tactics and receive positive response from society. However, the political process is completely uncertain and almost unpredictable. The window of opportunity in the political stream always opens and closes very fast. The success of healthy public policy advocacy in this stream is, therefore, determined by the perfect combination of the opportunity and deliberative preparation.

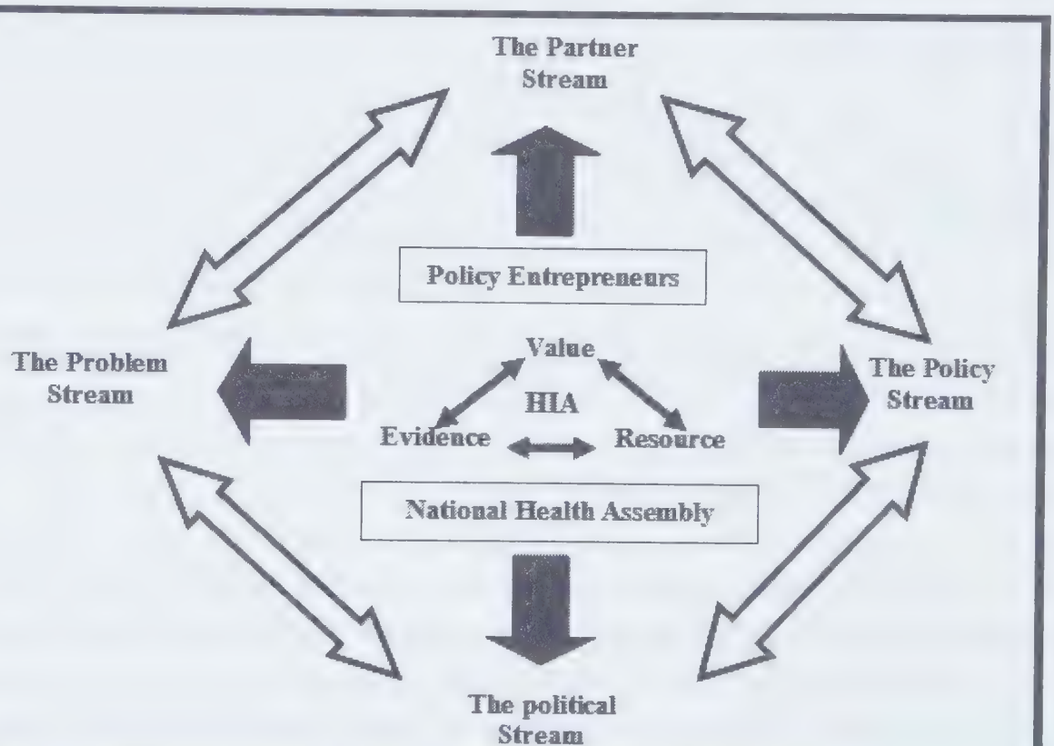
Source: *Decharut Sukkumnoed. 2002.*

Here the concept policy entrepreneur was firstly introduced. In general, policy entrepreneurs, who can be politicians, bureaucrats, analysts, consultants, or NGOs, mobilize opinions and institutions and they try to ensure the idea does not fall of the agenda. Since the policy process in open-end process and mission of policy entrepreneurs is quite ambitious, in reality, not all HIA practitioners can act as a policy entrepreneur. This stresses the importance of strong relationship or networking between HIA practitioners and policy entrepreneurs in each policy sector.

National Health Assembly process has been aimed and planned to fulfill this job, by providing the institutional mechanism of such policy cooperation between policy entrepreneurs, health promotion networks, civil society, and HIA practitioners. At the same time, HIA is still expected to be the process, which provides the information on values, evidence, and re-

sources, as well as, the opportunities for informed and democratic discussion within National Health Assembly. Recently, National Health Assembly in 2003 has started testing this model.

The main progress in this step is to bridge all levels of core values of HIA and healthy public policy together. The three core values of HIA; namely value, evidence, and resource, will be the focal points of investigation and communication in order to facilitate the desirable movement within four main streams of public policy process, through the co-ordination and co-operation of policy entrepreneurs and National Health Assembly. Overall conceptual framework of HIA core values and its participation in public policy is presented in *Box 5*.



Box 5: Conceptual Framework of HIA Core Value and HIA Participation in Healthy Public Policy Process.

Source: Modified from Decharut Sukkumnoed et al. 2002.

There is small theoretical note that, by linking HIA to public policy process and to institutional framework within health system reform, the formation of HIA development in Thailand is clearly also influenced by another theory of policy process, called Institutional Rational Choices (*see also Box 3*). It is also very important to note that, both in theoretical and practical sense, the formation of idea for HIA development always come along with the framework of "Triangle that Moves

the Mountain" (for more detail see Wiput Phoolcharoen, 2001), which is the fundamental framework of health system reform in Thailand. Therefore, this HIA and HPP framework is more an elaborate and operational version of "Triangle that Moves the Mountain" in healthy public policy advocacy, rather than an independent or competing conceptual idea.

2. Observations on HIA Participation in Healthy Public Policy Process

This part aims to provide some observations on how HIA actually participates in formulating healthy public policy in Thai contexts. The discussion will be divided into three main parts. The first part will concentrate on the implementation of three core values and its contribution to healthy public policy. The second part will provide the observation on the participation of HIA in public policy process. Then, the progress in strengthening policy entrepreneurs and National Health Assembly will be observed. The observations are drawn from ten case studies, shown in Box 6, based on my own observation. Therefore, it is very important to note that, as mentioned in the introduction part, this paper is more on preliminary observation for further reflective and empowerment evaluation rather than the critical and concrete evaluation of its own.

2.1 The Contribution of Three Core Values of HIA

a) High Priority for Social Value

From all these ten cases, it can be seen that Thai version of HIA development has paid high attention in social values and evidence. By focusing on social values, some HIA case studies can lead to impressive impacts on HIA and policy process, as shown in Box 7. The emphasizing on social values links to more inclusive policy discussion both in terms of wider stakeholders and broader perspective of health and health determinants. Focusing on "the values of health", which certainly include social and spiritual health, can, to some extent, facilitate the compromising discussion among different stakeholders within conflict situations.

Unsurprisingly, HIA development in Thailand has received warm welcome from civil society. However, in practice, to fulfill this impressive value-driven HIA case study successfully, it also needs innovative methodology to cover and present evidence from all aspects of values, which will be discussed later.

b) Need for Innovative Methodology for Sound Evidence

Evidence has been considered as the core value of HIA since it was introduced in Thailand. The analytical frameworks and methodologies for searching and verifying evidence have been continuously developed, especially in terms of participatory research approach with strong collaboration with local community, as presented in Box 7. However, when these frameworks and methodologies links to agreed social values in HIA process, in some cases, they reach some certain limit. This is because, some social values, like spiritual health, are difficult to measure, observe, or even strictly identify, with old paradigm framework and methodology. It is clear that, in many cases, the link between value, methodology, and, then, evidence of HIA cases is not satisfactorily strong. Consequently, some important values within these HIA case studies are offset by narrow and mechanistic views of quantitative measurement and specified evidence. Therefore, the innovative, or possibly radical, methodological improvement should be recommended as the top priority for further HIA development in Thailand.

c) Require Better Focusing on Resource

Focusing on resource as a core value of HIA process has come much later compared to the emphasizing on evidence and value. Thus, it also receives quite less attention compared to the former two core values. This implies that, in many cases, HIA in Thailand are still looking and discussing only health consequences of one specific proposal, left alone other possibilities within the society. However, as presented in Box 6, there is a clear tendency in focusing more on resource as a HIA core value. The result from few HIA case studies, as presented in Box 7, is clear that, the better understanding on resources, the more choices available for society, and, then, the more interesting and creative discussion in HIA process. This also implies the more effective partnership and the more attractive

alternative policy proposal in public policy process.

However, the knowledge and skill for analyzing potential and available resources may differ from which is applied for analyzing health impacts from specific projects, policies, or proposals. Therefore, the capacity building and networking is required to be able to develop better focusing on this core value, which will certainly shift HIA contribution towards more effective healthy public policy tools.

d) Overall Observation

In short, these three core values provide good fundamental ways of approaching or participating in public policy process through HIA process. However, the effectiveness in strengthening their analytical frameworks, methodologies, and human capacities is the real challenge to ensure the success of HIA development, as well as, its desirable contribution to healthy public policy in the reality.

Box 6 The Overall Observations on the Focus of and the Contribution to Healthy Public Policy from Some Selected HIA Case studies in Thailand

HIA Case Studies	HIA Core Value			HPP Process				Policy Impact	
	Value	Evidence	Resource	Problem	Partner	Policy Proposal	Political Process	Project Level	Policy Arena
1. Mab Ta Put Industrial Estate (2001)	☺☺	☺☺☺	☺	☺☺☺	☺	☺	☺	☺	☺☺
2. Contract Farming (2001)	☺☺	☺☺	☺	☺☺	☺	☺☺	☺	N.A.	☺
3. Pak Mun Hydropower (2002)	☺☺☺	☺☺	☺☺	☺☺	☺	☺	☺☺	☺	☺☺
4. Skyscraping Building in Chiang Mai (2002)	☺☺☺	☺☺	☺☺	☺☺☺	☺☺☺	☺	☺☺	☺☺☺	☺☺
5. Nakorn Nayok Water Pollution (2002-2003)	☺☺	☺☺☺	☺☺	☺☺☺	☺☺	☺☺	☺☺☺	☺☺	☺☺
6. Wieng Hang Coal Mining (2002-2003)	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺
7. Fang Large Orange Plantation (2002-2003)	☺☺☺	☺☺☺	☺☺	☺☺☺	☺☺	☺	☺☺	☺☺	☺☺
8. Sustainable Agricultural Policy (2003)	☺☺☺	☺☺	☺☺☺	☺☺☺	☺☺☺	☺☺	☺	N.A.	☺☺
9. Biomass Power Plant (2003)	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺	☺☺
10. Potash Mining (2003)	☺☺☺	☺☺	☺☺☺	☺☺☺	☺☺☺	☺☺	☺☺☺	☺☺☺	☺☺☺

Source: Own Observation

Note.: 1) In HIA core value and HPP process, ☺ = minor focus, ☺☺ = general focus, ☺☺☺ = main focus.

2) In Policy Outcome; N.A. = no application for project level, ☺ = small impact ☺☺ = fair impact, ☺☺☺ = great impact.

3) This table *is not aimed to compare between different case studies*, since, in each case, the situations are quite different. The different levels of focus on HIA core values and HPP Process, mainly compare with other aspects in its own case study. The policy outcomes are also mainly compared to their own purposes of the study.

Box 7 The Examples on Strengths and Weakness in Implementing HIA Core Values from Some Selected Case Studies in Thailand.

Case	Strength	Weakness
1. Mab Ta Put Industrial Estate (2001)	**Evidence**: Systematic reviews of health impacts in four dimension of health provide comprehensive information on health impact, followed by the detail participatory action research and epidemiological research, confirms strong relationship between health impacts and industrial pollution.	**Resource:** The resource depletion in the region has been reviewed, but analysis of available and potential resources has not been provided. Therefore, only problems were raised, but no strong policy proposal put forward to the society.
2. Pak Mun Hydropower (2002)	**Value**: The definition and the determinants of health were locally defined. Then, the evidence was collected according to local determinants of health by local people, showing the health impacts from local perspective, based on local values.	**Evidence:** Based on local value and information, there were not enough concrete evidence to convince the government to make the decision in favor of healthier solution.
3. Skyscraping Building in Chiang Mai (2002)	**Value**: As a historical city, the case can bring the spiritual health impacts relating to the increasing in skyscraping building. It leads to enormous positive response from the local society and has the great impacts in policy arena	**Evidence:** Due to the limited of time, the case can only provide public opinion of health impacts. In fact, if time was allowed, impacts on various social values can be reviewed giving insightful information for further city planning.
4. Fang Large Plantation (2002-2003)	**Evidence:** Although the case have applied participatory approach, it carried out with good statistics mind and details of health impacts, leading to provide comprehensive quantitative results from local community.	**Resource:** The analysis of available and potential resource is not strong enough to pursue alternative policy proposal through the public, as well as, to develop strong network outside the local area.
5. Potash Mining (2003)	**Resource**: All available and potential resource in the province has been intensively analyzed and discussed in public forum, leading to the strong partnership stream and strong local contribution to HIA process, including business sector.	

Source: Own Observation

2.2 Participation in the Four Main Streams of Public Policy Process

First of all, it is very important to note that, as mentioned in previous part, HIA in Thailand did not develop with the initial idea of public participation. When the second and, especially, the third version of idea formation emerged, the participation of HIA in HPP has been stressed, and then developed. Thus, it is not surprising that, in the Box 6, the problem stream has been developed much more than other three streams during the first period of HIA development. However, each of other three streams has shown its importance in public policy afterward, as also presented in *Box 6*.

a) Problem Stream: Clear but not enough

Obviously, the introduction of HIA in Thailand has emerged as a result of ineffective public policies and regulations to protect health of Thai people. Therefore, the focus of problem stream is not surprising consequence. From these ten cases, HIA can provide more insightful and comprehensive on health impacts, based on social values and various types of evidence, leading to higher public awareness on health impacts from development policies and activities, as well as, higher demand for healthy public policy.

However, unfortunately, in many cases, only clear problem stream is not sufficient to move policy arena. It also needs something else to hold this health problem stream in the political and social agenda. This lesson has been clear since the first year of implementation and the improvement has been done in two main relating ways. First, it needs the linkage with other problems in the problem stream, such as economic, social, or political aspects, within each specific case. Second, it should link to other three streams and search for window of opportunity to be open. Some of better practices in this political stream were presented in Box 8. In short, the development of HIA can certainly bring the health issues into political agenda through the problem stream, but it alone cannot pursue to the desirable end of policy process.

b) Partner Stream: Strength and Challenge

The importance of partner stream has been stressed clearly after the first year of implementation, as mentioned previously in the problem stream. Therefore, all later HIA case studies have paid much higher attention to this stream. In practice, there are different strategies in developing and strengthening partnership, including scope and speed of partner building, resulting in difference in the strength and effectiveness of partnership. Presently, HPP-HIA networks can play a leading role in some thematic policies, like sustainable agricultural policy. In others, HPP-HIA networks can also contribute and participate actively in their own policy arena. The partner stream now seems to be the most powerful stream within these four streams of Thailand's healthy public policy.

It is very important to note that, the strong partnership alone do not always ensure the success in healthy public policy formulation. The weakest links might occur in moving to develop and present alternative policy proposal to the whole society, as well as, to get support within the political process, as seen in some cases in Box 6 and Box 8. Therefore, from 2004, the strengthening the links between the partner stream and other streams should be the real challenge, not only for HIA development, but also for the health system reform as a whole.

c) Policy Stream: The Weakest Link, But Still High Potential

Although the problem and the partner streams are quite strong in Thailand, the policy proposals from HPP-HIA network putting forward to society are still not strong enough to convincingly move the policy direction. Generally, proposals posed to the society today are still more on reactive rather than proactive. They mainly present opinions or options to encounter health risk problems, but they cannot provide concrete plans or road maps with comprehensive assessment of what will happen within the society in terms of health and others, if the alternative policies will be chosen and implemented. This situation leads to higher risks in political ignorance, socially confusion, and political abuses by symbolic interaction, as seen in some HIA case studies.

The main causes of the weakness may link to a) inadequate focus on societal resource in HIA core value, b) the weakness in the partner stream, and c) inadequate forethought in political stream. Therefore, to improve this stream, the focus on societal resources needs to be strengthened with the hope to provide thoughtful information for the effective movement in partner and the policy stream. The partner stream also needs to work closer and harder to continuously improve their policy proposal to fit together with other streams and to be attractive for other stakeholders too. The knowledge and insight in political stream should be stimulated and shared among HPP-HIA networks. Hopefully, with all these recommendations, the capacity in policy stream can be significantly improved, leading to stronger links with other streams moving together towards healthier public policy.

d) Political Stream: Discover the Black Box

In Thailand, it is quite a traditional norm that academicians should keep their hands far from the political arena. Therefore, the political process is quite similar to black box without publicly known information and insight, and, then, without academic knowledge and recommendation. This norm certainly has some adverse effects in HPP-HIA development. However, after the redefinition of political arena within Thai society by including civic movement as people politics, the insightful information and knowledge on how political process works have been gradually accumulated. There are few cases, presented in Box 8, which are quite successful in political participation, leading to clear political decision in favor of healthy public policy. Although some successes are still based on personnel styles, connections, and special occasions, it can, to some extent, generalize and share among the HPP-HIA network, as an insight information, and, possibly in future, as a knowledge for moving the political stream. The attempts to systematize this information and knowledge should be regarded as one of the top priorities for HIA development in Thailand.

However, it is very important to note that, focusing too much on political action can cause some dangerous symbolic political actions, since, in reality, the policy implementation will also be taken somewhere outside political arena, especially in the hands of bureaucrats, who may not have any interests in doing so. The balancing focus on how will be decided

and how will be implemented should be stressed here. To avoid this problem, the insight from "the Institutional Rational Choices" is useful to carry out the desirable policy changes in all levels (*see also in Box 3*).

2.3 Policy Entrepreneurs and National Health Assembly

The bridges between these four streams are difficult tasks. They cannot be accomplished without strong and committed policy entrepreneurs. Finding the brand new policy entrepreneurs is certainly not an easy job also. Strengthening some existing policy actors, like NGOs, civil organization, and academicians, who already involving in advocating healthy public policy, might be better strategy, at least in the short term. Integrating the concepts of "policy entrepreneur" into HIA development in Thailand is quite a useful idea, since it can partly offset some limitations of HIA practitioners, especially in the resource core value, in the partner stream, policy stream, and the political stream.

Concurrently, HIA development can also help policy entrepreneurs in deciphering the health evidence, then better understanding in the problem stream, as well as, provide the forum in which they can form their partnership, advocate for healthier policy proposals, and mobilize political supports. These mutual benefits can be seen also in working together between HIA development and National Health Assembly. Presently, National Health Assembly becomes the main policy forum for HPP-HIA network to develop their partnership, discuss problem identification and policy proposals, as well as, search for political supports.

Although, in the short-term, the mutual benefits between policy entrepreneurs, HIA development, and National Health Assembly are quite clear and impressive, the long-term relationship strategy is not yet well-established. One should not forget that, all policy entrepreneurs also have their own limitation, just as HIA practitioners and the others. Without effective strategic long-term relationship, including capacity building and knowledge management among strategic partners, the desirable impacts on healthy public policy may not be sustainable in the long run.

3. HIA Contribution to Healthy Public Policy Arena

From all evolution process of idea formation, it can be seen clearly that, the contribution to healthy public policy is the main objective not the by-product as usually seen in other research programs. Within only three years, the development of HIA has offered a fundamental institution, a fundamental core value, and a policy participation framework to Thai policy arena. However, the changes in policy formulation depend on various factors beyond the controls of HIA development. Therefore, as a concluding session, this paper suggests focusing our analysis on the change in general healthy public policy arena, rather than the changes in any specific policy proposals or issues.

a) Raising Public Awareness through Stronger Evidence

The first desirable change in policy arena is the public awareness raised towards healthier public policy. The more often and systematic social quotation on adverse health impacts from developmental policy, as well as, the stronger demand for healthy public policy can be clearly seen both in National Health Assembly and in other social forum. This change has been occurred as results of hard workings in the problem stream under three HIA core values, especially value and evidence ones. This change in policy arena allows health aspects to be included and even more important in policy formulation and planning process. However, without strong connection with other streams, it cannot be ensured that the healthier solution will be chosen under the decision-making process.

b) Value-Oriented Forum for Peaceful Decision-Making

Based on social values, HIA development in Thailand can lead to the open and inclusive process and forum for decision-making, as well as, for conflict resolution. Using health as central values of decision-making

implicitly means the impact of human in various aspects will be the center of the decision making process. Consequently, it shifts the power within decision-making process and discussion forum in favor of local people, who have strong social values but weak technical background and jargons. It can also help local people to systematize and verify their own practical evidence. Therefore, the balance of power within the policy arena will significantly improved. This provides more rooms for peaceful conflict resolution. Last but not least, as mentioned earlier, focusing on "the values of health", which include social and spiritual health, can facilitate the peaceful dialogues among different stakeholders within conflict situations.

c) Accumulation of Social Resources through Partnership

Although the problem alert and alternative healthier solution from the problem and the policy stream are not strong enough for political convincing, it is powerful enough for partnership building among civic movement to promote healthy public policy. The purposes of partnership are not only for mobilizing political and social supports, but also for accumulating and strengthening "resources", as a core HIA value, within the society, including sharing knowledge, information, and experiences on the best practices. This will provide wider windows of opportunity both in the policy stream, as well as, in political stream. It is essential to note that, in reality, unlike step-by-step textbook, the political stream always acts in favor of having solutions rather than solving the problems. Apart from political supports, accumulation of resources, including knowledge, within the society is the ideological means towards the promotion of "real public" policy.

d) Real Construction of Institutional Design

One of the aims of the National Health Act is to establish policy mechanism, which opens for public and civic to join and influence public policy with strong evidence and innovative solutions. National Health Assembly is established with expectation to fulfil this aim. However, the Assembly needs strong content to investigate and discuss. Concurrently, HIA development also needs political forum to persuade the healthier policy ideas to society and politics. This is quite a perfect combination for mutual benefits. In general, HIA with the three core values have fulfilled this job

quite well. It has raised awareness on social values of healthy living and provided information on evidence and resource to the Assembly, both in local and national levels. With the collaboration of policy entrepreneurs, HPP-HIA networks also continue their participation in healthy public policy. Therefore, National Health Assembly becomes lively institutional structure now. Furthermore, HPP-HIA networks also play crucial roles in introducing and influencing core concepts and institutional frameworks for Thailand's EIA reform, based on the experiences of HIA development.

e) Strengthening Policy Entrepreneurs

As mentioned before, the four main streams in public policy process cannot be successfully carried out without strong policy entrepreneurs. However, in Thailand, many policy entrepreneurs involving in healthy public policy formulation face with serious limitations. The limitation can be seen in terms of skill, information, knowledge, resources and status in policy arena. So far, HIA development can assist these policy entrepreneurs to strengthen their ability, as well as, to acknowledge their position in policy arena, through a) information and knowledge gains from HIA works, b) the partnership strategy and c) to facilitate their discussion in National Health Assembly. To continue this essential task, the long-term strategy for strengthening policy entrepreneurs and their relationship with HIA development is highly recommended.

f) Preparation of Comprehensive Alternative Proposal

Although the policy stream is not so strong influence, it has started to develop their alternative policy proposal right now, as seen in Sustainable Agriculture Network. The better version of policy proposal can be expected from all HPP-HIA thematic networks and the National Health Assembly in 2004. This is very important sign for the development of civil society as a whole. Because it clearly shows that, civil society in Thailand does not only have capacity to demand, now we also have capacity to design our desirable future. Although the improvement in the policy stream can be achieved by working closely within the partner stream and with the National Health Assembly, it also needs comprehensive capacity building for HIA practitioners, HPP-HIA networks, and policy entrepreneurs as well.

g) Possibility of Knowledge Advancement in the Undiscovered Fields

The formation of HIA development in Thailand has suggested the discovering and developing in many fields of knowledge. Introducing social value as a HIA core value need advance knowledge on the aspects and dimension of social and spiritual heath, both in theoretical and operational levels. Then, the appropriate methodological is also required. Participating in the four main streams in public policy process also needs, and can lead to, the accumulation of knowledge in the new fields, especially in the policy and the political streams. Therefore, HIA development can lead to the knowledge building in the undiscovered field, because this knowledge also, to some extent, determines the success of HIA development in Thailand as well. Obviously, the capacity to exploit this possibility is crucial for HIA development in the coming years.

4. Recommendation for Further Development

Within the three years of HIA development, Thailand has developed and provided the core values for HIA implementation, as well as, the framework for participating in public policy process. This shows its objectives and systematic plan in advocating public policy. The observation from short periods of time and limited number of case studies suggests that, these core values and frameworks can be used as a roadmap to continue further HIA development, at least until its end of the first period in 2004. Furthermore, some crucial points, as summarized below, should be paid much higher attention and well planned.

a) Development of methodology with the new holistic health paradigm to provide comprehensive and sound evidence according to social values and with the strong collaboration with local communities.

b) Better focusing on resources with stronger link to improve the performance in the policy stream, aiming to upgrade existing alternative policy proposals with sufficient insightful information on overall health and other impacts.

c) Strategy for long-term relationship between policy entrepreneurs, National Health Assembly, and HIA development, including capacity strengthening for policy entrepreneurs, as well as HIA practitioners.

d) Deliberative forethought and knowledge accumulation in participation in the political stream.

All these points are not only crucial for the continuation of its development in the first period, but also to create wider possibility and capacity for the next development period. It also should be note that, the existing strong partnership, lively established institutional body, and effective knowledge management should be the key mechanism for improving these four crucial areas.

Last, since, as mentioned in the first quotation, the knowledge on policy process can be gained mainly through the experiences, the critical and reflective evaluation of the experiences is crucial for planning ahead. In Buddha teaching, this refers to Trisikha or the three components of effective learning, namely; Pariyati (theoretical principles), Patibutti (practice experiences), and Patiwetha (reflective self-evaluation). According to Lord Buddha, only if all these three components are well developed and well intertwined, the person can achieved the higher and deeper steps of the noble life, as we also wish to do in our HIA development.

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Ethics and Health Impact Assessment (HIA) Development for the Thai Public Policy Process

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Overview

Social policy's ethics is a new civil society's explanation in development and policy implementation of involvement. In the past century there has been an important explanation in public policy which includes Good Governance, Accountability, and Social Responsibility.

In reality, ethic is implicit philosophy. That is some factors and conditions determining ethics are not yet clearly concluded such as either widely or narrow of meaning and perspective in the word "Ethics" itself and in what circumstances are the decisions not ethics. Furthermore, there has not been a clear explanation practically in some points such as conflict of interest, scope of work and benefit sharing ect. Academically, tools have been constructed in order to measure levels of ethic of people involved in decision making or implementing such policies. On the contrary, ethic is clearly specified in religion explanation but not any penalty to whom violating the ethic for example norm and moral.

Over 70 years that Thailand has changed to democracy but its public policy development and implementation has been stand stilled although

the constitution of the Kingdom of Thailand B.E. 2540 and Decentralization Act B.E. 2542 was drawn from a participation of civil society. Governance and authority system have still been centralized with the government particularly the management administration and budgeting system. Moreover, the complication of government service structure led to the decrease in ethic in policy decision making.

Lacking of good process in public policy implementation causes impacts which are different in accordance with circumstances. The level of impacts is however, upon to an ethic in decision making. At the same time, public policy process provides a systematic monitor form every part, how and or not?

This article aims to propose an initial idea in public policy ethic as a tool of developing HIA which can be applied to healthy public policy process.

HIA and Public Policy Process

Health Impact Assessment, HIA definition is "a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population." (WHO, 1999 ref. from Ben Cave, 2001).

HIA is a process of which wide opens from various source participation from the development of conceptual framework of policies throughout policy implementation with the health outcome as an objective. It combines knowledge from related disciplines, such as anthropology, ethnology, epidemiology, sociology, philosophy or history, in analyzing a public policy process.

In general, there are three factors, resources, value, and evidence, which can influence policy – or decision making. These are connected to explain changes of policy through determinant of health which leads to development of health policy process and implementation.

The original health policy thought was to set up the public health policy emphasizing centralized health services authority and plain dimen-

sion of physical health. Moreover, it was a passive strategies rather than a pro-active in attacking causes of illness such as social problem, environmental problem, and economic problem. Those were consequences of unbalanced development. The main idea in solving the problem must come from changes of the thought in order to derive a healthy policy.

Public policy implementation in every level, policy, plan, programme and project have an impact to overall inevitably even though such of those do not cause any harmful for physical problem such as pollution. Having decided in conducting any policy causes social change generally.

Paradigm shift from health service to sustained-strategic development which concerns health as a center provides development of new health definition with a broad perspective which includes physical health, mental health, social health, and spiritual health.

Society's participation and monitoring is an important factor of public policy construction, development and implementation. In the past, only economic development was a factor determining the health public policy but evidence based and resource were excluded.

The value of policy judgments was constructed to seek on purpose which is far different from the past. This is because the process tries to raise the standard of living to be more modernized. Therefore the decision in choosing policy is shown as follows.

- Economic development aims at economic growth and wealth rather than considering the outcome of health resulted from economic development scheme. The direction of development therefore emphasizes on efficiency, productivity and quantity of commodity responding to the need of goods and service market and also the competition rather than responses to the basic minimum need.
- Social development has a goal to raise community level from un-development boundary. The boundary of un-development, being development, and poor are used to determine the scope policy conduction. So the direction of social development emphasizes the resource contribution to escape from un-development. This is of course lead to distortion in policy conduction from social basis particularly the culture and social context. Therefore the outcome of health policy is seen only in a view of basic minimum need favor lacking of emphasizing

human being and the social fairness that should receive product and services that make life quality exist.

- Environmental development has the objective in emphasizing on the use of existing resource with economic development, especially on the product manufacturing and services more than putting emphasize on preservation together with the balance of using. Besides, the consequent impact is pollution problem that occurred from the lack of accountability to public society. Moreover, the obstruction of accessing to resources by using government authority, unequally of the resource allocation for different social group as well as the economic value, led to the distortion of basic principle of environmental development. Thus, environmental development became one factor influencing healthy especially the grab of resources and inequality between the use and the preservation.

Mobility cycle of public policy process from process development and process and policy formulation, exchanging the leaning process, seeking for mutual public opinion (policy initiative), seeking for the political negotiation in decision making (policy negotiation), policy decision making, leading to policy movement. The acceptance of public toward policy improvement is the cycle that is continuing move. The formulation of participation method of every sector on the process is the significant part for acceptance in the policy content for the effective operation. However, ethic is a condition that makes content policy and its operation continuously and last.

Considering the overall picture of policy process, it was found that healthy and policy operation in the past reflected the value and weight of decision making that lack of equality in common and every side. Moreover, the determinant of good healthy is not only derived from the development of a good public policy, but also from outside which is large policy covering every social aspect. The new development of conceptual and mobility cycle of public policy process with its clearness and ethic as a whole provides the permanent public policy and is socially acceptable as a good operation.

The based view of ideology of ethics

Ethics with public policy point of view are differences in aspects. The weighting and valuing with the choosing and decision-making towards one policy indicate the important of social toward each policy. The equality of development, policy endurance and continuity of policy operation can be moved continuously or not depend on process decision that has ethic.

The word "Public" is the broad viewpoint that covers the social performance. Any conduction can impact to the social process mobility as a whole People in their authority is influenced. But how much they will get impact, more or less, direct or indirect, risk or non-risky, the public policy is the method of screen for finding the public policy conclusion.

Across the conceptual framework moving from the public policy in health public services toward the health promotion aims at the precaution of the cause of illness, they make the healthy system change and became public issue that social has to change the process simultaneously.

However, the move of process in public policy is not easy. The relationship of authority structure and power between civil society and politic sector are needed the policy initiative and solution. It also needed more policy deliberation and public policy decision making requires ethic for its process significantly.

Ethic viewpoint that is the conditional factors in public policy decision making can be seen in four bases covering welfare based, standard based, right based, and ecology based. These are fours bases provide weight on value, resources and the use of evidence based differently as follows:

- Welfare Based

- Based thought that aims at answering the question of dissemination and allocation of social resources for different group of people in society, provides the equality and equity outcome on welfare and insurance and disseminate resources throughout all group of people in

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society without the unfair distribution impact.

- Moreover, the dissemination and allocation of resources provides optimize outcome for different group of people

- Public policy process in this base thought has possibility to have participation from all sectors and have the negotiation solution in the resources dissemination and allocation

- Standard Based

- Developing of ethic from comparative base thought with the built standard in accordance with academic principle. In some chance, it should have social standard as well such as the size of perception, health risk, health hazard from different activities etc.

- Various measurements depend on authority structure system of the government or the structure of law more than the social standard such as norm, moral, cultural, and traditional etc.

- There are two ethical thoughts. The first thought is settled in laws such as Code of Conducts, Code of Practice, Environmental Impact Assessment (EIA) and environmental standard (air pollution quality, water quality). Another thought is defined by academic methods presented in the form of manual, guideline, handbooks, environmental standard quality and product standard (ISO14000, ISO18000, Good Agriculture Practice (GAP), Good Manufacturing Practices: GMP), Precaution Note etc.

- The leading to the public policy operation is the operation in accordance with and not over the limitation of the provided regulation. It means any conduction that cause hazardous not over the standard level provided, that conduction is assumed not to influence to social in general and that conduction can continue its operation.

- However, ethic from the standard thought base is the formal ethic and emphasize on technical that requires knowledge, opinion and decision from the expertise of experts more than social understanding.

- Right Based

- Basis thought on the right is the new understanding for Thai society after the Constitution of the Kingdom of Thailand B.E. 2540 which was the formal approved of the right. Before this time, the approved of the right in Thai society was informal. Thai society explained community right and common right more than individual right. The formal right approval was defined specially in personal right.

- Constitution of the Kingdom of Thailand B.E. 2540 provided the personal right of Thai citizen especially the right of political participation and the opportunity provided for policy making through the representatives or senators. However, the Constitution has opened the gap for developing public policy process from public sectors. Therefore, formal right is one ethic that society can create for its good heath or public policy for health.

- Ethic from this basis thought is explainable in two parts covering whose right and what property right. Public policy process requires the combination of two parts for decision making. The violation of personal right or common social right can cause the impact from the operation on policy.

- However, the right is abstract that has not yet clear in the framework of right. In addition, social has its complication in structure. Social class always has conflicts from the impact on policy and the impact occurred mostly with the lower class of society such as poor, agriculture persistent patient, unskillful labor etc.

- The use of ethic with public policy process requires the limitation of the size and boundary of the impact that every part of social is acceptable from the mutual agreement. Also, social condition (such as culture, tradition, value and belief) is the important factor that can find the solution for the process.

- Ecology Based

- Ethic from this basis thought is developed after the Earth Summit at Stockholm Sweden. During the 1970, the change of world environmental condition caused tremendous progress in the environmental sciences.

- Sustainable Development is the basic thought that explains the use of material balance and the fair resources allocation intra and inter-generation.

- However, the population growth, capitalism economic system that emphasize on the consumption growth and technology for clean up become the factor that explain unsustainable development.

- Public policy process has condition of the use and allocating resources for policy limitation.

All four bases also provide another explanation that lead to public policy process covering Transparency, Accountability and Responsibility. This ethics are the process of monitoring whole system.

The development of ethic on different basis thought with public policy process requires the development of the process of participation, empowerment, and decentralize of authority all together. At the same time, the process of Regulation with Third Party is the process that causes the examining of ethic on public policy process.

Conclusion

Ethic in public policy process with the tools and assessment process of the health impact is new for Thai society. Various thought of various sectors provide different point of view such as western and eastern conceptual framework that put important to the word "healthy" differently and the different social way of life etc. Moreover the target of social toward public policy has different discussion.

How important of ethic in Thai society is the question that need for the definition of scoping and consider the public policy issue also.

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PART II

Analyzing Public Policy Processes: The Roadmap for HIA Struggling in Thai Policy Arenas

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Applying Health Impact Assessment to promote healthy public policy is less effective without clear understanding of public policy processes. However, in the real world, public policy processes are multi-facets and less predictable. Several HIA studies in Thailand cannot lead to satisfactory policy outcomes, due to the lack of insights on public policy process. Therefore, capacity strengthening for Thai HIA researchers in understanding and analyzing public policy processes is crucial for HIA and healthy public policy development in Thailand.

This paper is one of the attempts to overcome this weakness by developing an appropriate framework for public policy analysis, together with the learning activities for capacity strengthening. The framework development has been done in two main ways; the review of the relevant theories of policy process and the reflections from actual practices in Thailand. Insights from both analyses have been synthesized through a series of in-house and public discussions. At the end, a more comprehensive policy analysis framework is expected to be the guidelines for HIA practitioners and other policy actors in Thai policy arenas.

This paper will be divided into five main parts. The first part will be the background information on the development of policy analysis framework from the initial phase of the Healthy Public Policy and Health Impact Assessment (HPP-HIA) program. Then, the three policy analysis

models will be reviewed. In the third part, the analysis of policy environments from previous HIA experiences will be described in order to view the appropriateness of these three policy analysis models within Thai policy contexts. The outcomes of the second and third part will be synthesized into a comprehensive analytical framework. However, the application of this framework may depend very much on different policy condition. Thus, the fifth part will elaborate how this framework should be used in different policy conditions. Lastly, the conclusion will be provided.

1. Background

Although HIA in Thailand has been developed as a tool for healthy public policy development almost at the starting point in 2001 , the first HIA version applied an assumption of direct relationship between assessment and policy process. This may be influenced by the EIA concept, instead of healthy public policy approach. As a consequence, the involved policy process was not seriously analyzed. Therefore, the recommendations from several HIA cannot lead to actual policy and public actions. Fortunately, through continuously reflective learning, this weakness was found and followed by the suggestion for HPP-HIA to pay more serious attention on understanding policy process and identifying effective HIA contributions within the policy process.

The initial attempt was taken in 2003, when HPP-HIA program set up the clear target for healthy public policy development. The broad framework for healthy public policy development with the four main components and proposed HIA contribution was present publicly as seen in Figure 1. In 2004, the comparison of policy framework between Thailand and the Netherlands was also conducted . However, the practical outcomes have not been satisfied . The success in policy influence was still quite uncertain, as mentioned in the empowerment evaluation report in 2004 . This is because the framework is still too broad and inadequate insightful explanations about the relationships of these core elements within policy process. Moreover, the lack of continuous capacity strengthening activities may also limit the potential of this initial framework and better policy involvement of HIA practitioners.

To gain more insightful understandings, this study has explored deeply into the relevant theoretical grounds. Concurrently, the reflections from

actual practices have also been combined in this policy analysis framework, with valuable contributions from policy scientists. Moreover, the capacity strengthening activities has also been conduct in parallel in order to incorporate practical insights and responses. Although, the outcome of this study is expected to be the comprehensive analytical framework, which can be used as practical guidelines for HIA researchers, it is subject to be reflected and re-conceptualized by lessons learnt from actual practices in the future.

2. Theoretical Framework for Policy Analysis

From several theoretical perspectives, HPP-HIA program has identified three main models of policy analysis as presented in Figure 1 and described below.

2.1 Linear Model

Liner model is the policy analysis model that is based on the assumption of full rationality in decision-making process. This perspective was developed during the 1950s and 1960s, with the development and expansion of bureaucratic structures and developmentalist states during the modernization era. This model suggests that the decisions in any organization including government policy-making should be made rationally . The policy analysis in this model, therefore, concentrates on how to develop principles, guidelines, and tools, for securing efficient and rational decisions and implementation.

The policy process in this model is usually perceived as a stage or step-by-step approach. Each stage has its own rules in guiding how rationalized decisions should be made. These stages and their principle criteria are usually referred to the laws, regulations, as well as professional and bureaucratic codes of practice. Moreover, various decision support tools have been developed, for example cost-Benefit Analysis (CBA), cost-effectiveness, environmental impact assessment (EIA) in order to ensure the rationalization in decision-making process. Obviously, this linear model has dominated public perceptions on policy-making process in Thailand up to now.

On one hand, the linear model seems to provide the strongest link

between scientific knowledge and decision-making process. It also sounds accountable with a clear set of principles and rules in each stage of decision-making. Thus, several people believe that this linear model will provide the best available options under the conditions we face and the knowledge we have so far.

However, on another hand, following the linear policy model inevitably implies that experts or so-call technocrat will receive a privilege role in decision-making process. Moreover, in practice, rationalization has usually been applied as goal oriented decision-making, but, in reality, policy debates and analysis are not only about how to achieve the goal more efficiently but also about the goal itself. The discussion about the societal goal(s) is hardly framed in linear rationalized model, since it (or they) depends very much on societal values rather than scientific rationality.

More importantly, the actual decision-making process does not seem to fit with the assumptions in the linear model . In political world, answer usually comes much earlier than question, therefore, there is no place for rationalization to be actually worked. When the answer is actually come first, the shortcut in formal decision-making processes may become usual practice. In several cases, to reach the predetermined answer, various decision support tools may be abused or badly applied. In some political and policy contexts, such as for the purposes of national security or economic expansion, there are a number of taboos in making an argument and applying the knowledge in these decision-making processes.

In other words, the linear model seems to work only in the academic or ideal world. It cannot provide the rules for decision-making in case of lacking of knowledge and evidence. It does not satisfactorily serve the need for meaningful public participation. It cannot explain the decision-making in the real world, when the power is always behind the rationality (and sometimes the rationality does not even notice) .

However, understanding the stage and procedure of decision-making is still useful for HIA researchers, because, it is nonetheless the way that government will follow or at least refer to. Analyzing linear model can lead to better understanding in terms of conditions, timings, and rationality within the government's decision process. Therefore, it can

provide an entry-point which HIA recommendations may be fit more meaningfully in the decision-making process.

2.2 Negotiation Model

The unrealistic assumption of the linear model forced policy analysts in searching for more practical-oriented framework. The second approach, so-called negotiation, focuses on policy as courses of action, within ongoing processes of negotiation and bargaining between multiple actors over time. As famously described by Lindblom, policy process in this approach is recognized as "the science of muddling through" rather than well-defined rationalized process .

The negotiation model can expand the scope of policy analysis to cover the issues of policy network, policy window, policy entrepreneurs, and policy-oriented learning. Within the negotiation model, there are two main analytical frameworks, which can differently applied for healthy public policy in Thailand; namely Multiple Stream Theory and Advocacy Coalition Framework.

a) Multiple Streams Framework:

The multiple streams framework was developed by John Kingdon (1984) . It views the policy process as the composition of three streams of actors and processes: a problem stream consisting of information about various problems and the proponents of various problem definitions and significance; a policy stream involving the proponents of solution to policy problems; and a political stream consisting of politicians and elected officials. In Kingdon's view, the streams normally operate independently of each other and do not lead to any significant changes, except when a "window of opportunity" permits policy entrepreneurs to couple various streams. If the entrepreneur's attempt is successful, the result is major policy change. However, normally the policy window is opened and closed very rapidly, therefore, timing and policy entrepreneurs' strategy is certainly crucial for policy changes.

This framework provides very useful insights for policy analysis. Unlike the linear model, the multiple streams framework has recognized and developed for condition that full rationalization cannot be applied,

which, in fact, is a normal situation in the political world. In this situation, the timing is very crucial. Identifying three policy streams and policy window, can help in understanding why policy changes happen in some cases and do not reach in other case. In practice, some policy changes do not occur because of the forces from the problem stream, but mainly because of the initiatives in policy streams (answer before problem). In some case, the policy and political streams are just waiting for the problem to be open. Therefore, these three policy streams can be used as both analytical and operational frameworks. The focus on policy entrepreneur is also very important to understand the roles of change agents in policy arena. Last, based on this framework, the success in policy advocacy depended on chances as much as on skill and capacity.

However, the multiple streams framework seems to focus on policy process as each decision-making shot within overall policy dynamics, which consequently make policy works become tactical rather than strategic. It also omits an overview insight on long-term changes including historical influences within a policy arena. Last, the independence of three streams may not be true in many cases, especially when the strong relationship of different actors operating in different streams is established .

b) The Advocacy Coalition Framework:

The advocacy coalition framework was developed by Sabatier and Jenkins-Smith . Unlike the multiple streams, this framework views policy changes as a process of changing ways of thinking in the longer term. Thus, this framework focuses on the interaction of advocacy coalitions - each consisting of actors from a variety of institutions who share a set of policy beliefs – within a policy subsystem. Policy change is a function of competition and policy-oriented learning within the subsystem and events and conditions outsides the subsystem. The framework spends a lot of time mapping the belief systems of policy network and analyzing the condition under which policy-oriented learning across coalitions can occur.

This advocacy coalition framework asserts the importance of policy network as one of the main mechanisms for policy changes. In more complex policy subsystem, the individual policy entrepreneurs are hardly

successful. Co-operation and co-ordination among different actors as a process of sharing capacities, expertise and opportunities is necessary for policy works in the longer term. In this way, a powerful policy network can effectively push policy into their directions and block effort and policy window of other networks. Oppositely, focusing on policy-oriented learning within and across the policy networks may also provide another way of changing policy from tactical play to better chance of mutually understanding. Therefore, analyzing the relationship within and between policy networks should provide useful insights for policy analysis, especially at more structural level and in longer-term perspective. However, the advocacy coalition framework does not provide a clear operational framework as compared to the multiple streams framework.

2.3 Deliberative Model

Although negotiation model provides more practical insights about actual policy process, it may not lead to better social understanding. This is because the negotiation model aims at the final policy outcomes rather than mutual understanding of different policy beliefs. However, in various cases, forcing too much to reach the desirable outcomes may lead to tension, conflict and mistrust within the society. Therefore, unlike conventional theories, deliberative policy analysis, developed during the 1990s, needs to draw its assumptions on contemporary situations, when we have to developed democratic systems on dispersed power, diminishing trust, ambiguous institutions, profound uncertainty and inequality, powerful transnational influences and active but highly differentiated citizens .

The deliberative policy model assumes "the preexistence of individuals engaged with others in diverse, fluid, and overlapping "discourse community", each with its own meaning systems and hence, knowledge forms and the ways of reasoning and valuing" . In other words, it presupposes that we live in a social world with the possibilities of "multiple interpretation". Therefore, it is quite important not only to raise the question of benefits and impacts of policy, but also the different meanings of policy for different actors .

The central question for deliberative policy analysts is "how is the policy issues being framed by various parties to the debate?". Frames,

just like a picture frame, "direct attention toward some elements while simultaneously diverting attention from other elements". Policy frames are often express through language and consist of a complex interrelationship among language, cognition (or perception), and action. According to Yanow, "frame conflict occurs not only because different interpretative communities focus cognitively and rationally on different elements of a policy issue, but because they value different elements differently" .

In this aspect, "interpretative modes of policy analysis seek to identify both the specific meanings, intended and made of specific policies and how those meanings are communicated and variously interpreted" . In other words, deliberative policy analysis should "be able to understand the complex ways in which meaning is hidden in policymaking discourse and thus be able to anticipate political controversies" .

Although the deliberative policy analysis must include empirical investigation, it needs to situate it 'in a larger set of normative concerns that give its findings meaning' . This is because "the structure of a policy argument is typically a complex blend of factual statements, interpretations, opinion and evaluation" . Hence, the task of deliberative analysis is to understand "a matter of establishing interconnections among the empirical data, normative assumptions (that structure our understanding of the social world), the interpretative judgments involved in the data collection process, the particular circumstances of situational context (in which the finding are generated and/or to which the conclusion apply), and specific conclusions".

Therefore, the main task of deliberative policy analysis is to understand "interactive and deliberative processes of discovering ends, recognizing other parties, marshalling the evidence and giving reasons, exploring the implications of various value positions and developing joint responsibility in concrete situations" . Certainly, the fundamental goal of this policy analysis is to discover ways of 'living together differently but respectfully' .

3. Thai Policy Environments and Theoretical Implications

Since the policy-making is highly relied on policy contexts, applying theoretical frameworks needs to understand the actual policy environments. In Thailand, the experiences from previous HIA and healthy public policy development within these four years are useful to understand policy environment and, consequently, appropriate theoretical implications, as discussed in this section.

a) Linear Model and Thai Policy Environments

It is obvious that the linear model still dominates formal policy process and policy analysis in public administrative discipline in Thailand. However, there is also clear evidence that, in fact, policy process is not worked this way. There are several times when government visions or demands can easily pass through shortcuts in policy-making process. EIA can be one of the good examples, when its process has been mainly used to legitimize pre-determined government decisions rather than to inform decision-making. Thus, not so many people in this country do believe in the linear model, especially when they are affected groups of decision-making process. This situation leads to social tension, conflict, and mistrust in several cases .

As mentioned earlier, although linear model does not fit with real-life policy-making. It is still useful to understand formal policy process. In the case of potash mining in Udon Thani, HIA researchers and local active citizens, can successfully analyze formal policy process and identify timings, rationality, and windows for different policy actions. These include showing mistake and incompleteness within EIA reports and demanding for HIA study as usually do in Canada, since project owner is a Canadian company. All these timely attempts finally lead to project reconsideration by the government .

b) Negotiation Model and Thai Policy Environments

Although linear model is still the main focus of Thai academic community, the negotiation model becomes dominant model in real policy arenas in Thailand. Instead of relying on linear policy decision, many policy actors, including affected local groups, use the policy negotiation in order to ensure their interests and quality of life. Organizing of policy networks also becomes normal practice in several policy arenas, such as sustainable agricultural network or sustainable energy network. In fact, policy network is now also gained more attention for policy analysts in Thailand. In a predictable future, the negotiation model seems to dominate policy-making in Thailand.

Obviously, the success in healthy policy negotiation is highly uncertain and varied case-by-case. It depends very much on timing, political pressure and opportunity, and strength and endurance of local actors. In case of HIA of high-rise building in Chiang Mai, HIA researcher and local active citizens succeed in coupling three policy streams, including local spiritual concerns, into local election campaign as a policy window . Therefore, the insights from the Multiple Streams and Advocacy Coalition Framework are certainly valuable, but the capacities of policy actors to implement and leverage insightful strategies are in question especially in the longer term. Therefore, the application of negotiation model should not always limit to one-shot decision-making, but also to strengthen capacities of policy networks in the long run.

c) Deliberative Model and Thai Policy Environments

Although Thai Constitution 1997 and the draft of National Health Act strongly assert the principle of public deliberation in policy-making process, it is still far from being normal practice in Thai policy arena. Centralization and unequal power structure in formal policy-making process and polarization in conflict policy negotiations prohibit the development of deliberative policy analysis and practice. Since public deliberation is somehow a cultural phenomenon, we cannot expect Thai society to adopt deliberative throughout the society only because it is mentioned in the constitution. Certainly, the insightful and practical guidance and capacity strengthening for deliberative policy analysis and practice are also highly required.

However, in some specific cases, the deliberative model can interestingly work well. In two controversial biomass power plant projects, HIA as public deliberation can lead to better understanding between local proponent and opponent groups . At policy level, HIA of pesticide control policy under WHO Health and Environment Linkage Initiative (HELI) provides more comprehensive picture of how pesticide policy has been framed differently by different policy actors and networks. This study leads to the suggestion that the existing knowledge needs and frameworks of each policy network cannot lead to better understanding of overall picture in the future, since it still focuses on different frames. What is essential is the knowledge links, which can allow policy actors to learn and understand each other and overall picture . Perhaps, these may be one of the first steps in implanting deliberative culture in this society.

It is quite clear that each policy analysis model has its own advantages and limitations in Thai policy environments. Therefore, the integration of the insights from three policy models should be useful for HIA implementation and healthy public policy development in different policy situation. The first attempt in integrating these three perspectives is presented in the next section.

4. Policy Analytical Framework for HIA

From three theoretical models of policy analysis and their implications for Thailand's policy environments, HPP-HIA program has developed an integrated analytical framework. The framework aims to provide some guidance for HIA researchers in Thailand to understand policy process and, more importantly, to identify an effective role of HIA and HIA researchers in each specific policy process.

Our HPP-HIA analytical framework views policy-making in three main layers. The first layer is the linear or formal policy process, which contain a number of decision nodes and govern by decision-making rules. Normally, the formal policy process is in the control of government and elected officials. However, in reality, the formal policy process is not occur in authorized vacuum but located on policy domain or policy subsystem, which consists of a number of competing policy coalitions or

networks. In other words, policy-making is shaped by different forces within the policy domain as the second layer. Moreover, in gaining social and political supports, each actor and policy network always communicates with the public outside the policy domain. Therefore, analyzing policy process has to go beyond policy domain to see the actions that have been taken and the responses in the society as the broadest layer of policy analysis. Based on these three layers, the eight aspects of policy analysis should be carefully conducted as discussed below.

a) Understanding Linear Policy Process

Our framework suggests HIA researcher to start with analyzing formal linear decision-making in order to find the decision nodes and understand their conditions, procedures and timings. Understanding formal decision-making conditions, procedures, and timings is useful to a) identify policy actors, at least the formal ones, b) to realize critical timing and window for policy influences and c) to clarify rationality which will used in the formal process. Although, this suggestion seems to be common, in practice, it is not usually done deliberately, leading to unclear strategy for HIA contribution in policy process.

b) Understanding Policy Networks

Then, the policy networks or the relationship of policy actors should be in focus. The understanding of this relationship is not only to identify active stakeholders, but also to understand their policy interpretations, different rationality they used and different policy framing in communicating with others both in policy domain and in societal level. Analyzing policy network also helps in understanding power relation both within and among the policy networks, which, in some ways, influences the rationality that has been used and claimed in policy domain and process.

c) Understanding Policy Meanings and Framing

The next step is moving into the societal levels. The focus should be on how policy issue has been interpreted and framed by various groups within the society, which certainly depended on historical and cultural influences, public perception and mood, and the communicative strate-

gies of policy networks, as discussed earlier. It is very important to note that public may interpret and frame policy issue differently, as mentioned in the deliberative model. Understanding policy meanings and framing helps HIA practitioner in understanding how public will analyze and interpret the different evidence and information related to policy issue, regarding to their policy meanings and framing.

d) Analyzing External Factors

Apart from understanding policy meaning and framing in public, in the societal level, it is also very essential to analyze the external forces within and outside the country. These external forces including socio-economic changes, political shocks, natural disaster and so on, which can shape public perceptions, values and rationalizations. Hence, it shapes policy meanings and framing. At the same time, it can open the policy window and change rationality and its influence within both policy domain and policy process. However, the importance of different external factors in policy process is certainly depended on public's policy framing and meaning.

e) Understanding Power Structure and Rationality

The first four steps look like the upstream of policy analysis. The insights from these steps as explained earlier have to be used in identifying the relationship between power structure and rationality in each decision node and in overall decision-making process. As a set of evidence-based policy recommendations, HIA in this aspect is a kind of rationality being used in policy-making process within the specific (and dynamic) power structure. Therefore, to be an effective intervention, HIA researcher needs to understand how different rationality will be used and worked differently in policy-making process. Understanding power structure and rationality will certainly define the roles and strategy of HIA in decision-making process. Unfortunately, there is no cookbook for conducting in this step yet, except the integration of insights from former steps with an attempt to discover the ways to act differently and meaningfully in policy-making process.

f) Understanding Timings and Policy Windows

However, in the real political world, the influences of different rationality in policy-making are highly depended on timing as mentioned in the Multiple Streams Framework. In other words, the policy window is very critical for policy influencing. Analyzing external factors and public policy framing will help in identifying suitable timing and window of opportunity. Certainly, identifying timing and policy window needs to fit with the timing of decision node in policy process.

g) Identifying HIA Role and Strategy

Both the understanding of power and rationality and identifying timing and policy window will be the two main aspects in identifying the roles and strategy of HIA contribution in policy-making process. For example, the role and strategy of HIA may focus on some specific decision node at appropriate timing. It can also be the joint analysis between the HIA and other important aspects or goals, such as public finance or social problems (as an influential rationality or policy window in decision-making process). It may also focus on convincing some powerful organizations within the power structure to shift their frames toward health aspects. It can also just open the decision-making process and rationality to the public and to ask public to show their responses. Unfortunately again, there is no golden rule on what should be the best HIA strategy for each policy-making. It still needs skill, experience, judgment and creativity of our HIA practitioner.

h) Effective Communication Strategy across Three Layers

Last but not least, since policy-making is long-term social learning process, focusing too much on each decision-making may overlook the actual benefits of HIA. Moreover, the policy process is full of influences, power forces and uncertainties, we should not expected that every HIA can always lead to desirable policy change. According to deliberative policy analysis, successful may lead to better social understanding rather than expected policy changes. In this view, unsuccessful case, in terms of present policy change, may become another accumulated pressure for opening to desirable and more sustainable outcomes in the future. Therefore, HIA researcher should pay serious attention in com-

municating with and between policy actors in policy domain and in public as much as in convincing policy-maker. In doing so, HIA researcher needs an influential communicative strategy, which required an insight from previous steps, especially from policy framing and policy window.

Although Figure 2 may organize our HPP-HIA framework in step-by-step style, in practice, all these steps are highly intertwined and perhaps inextricable. Therefore, it is not useful to take a step-by-step approach. HIA research may need to use this framework forward and backward in uncontrollable policy process. In short, this three layers of analysis with various directions of arrow is just a broad recommendation for HIA researcher to balance and integrate inside-out and outside-in viewpoints through the interconnections of important elements within policy-making process.

5. Policy Conditions and Policy Analysis

In the real political world, policy-making is not always about apparently formal decision-making process. Based on Lukes, power exercise can be seen in three dimensions; decision-making power, agenda-setting power, and thought manipulation power. Therefore, in this sense, the powerful players do not only have power to say yes or no to specific policy proposals, they also exercise power in setting up the agenda for decision-making including do nothing at all. Moreover, some powerful player may have extreme power in controlling or manipulating public perception and, consequently, keep some policy to be out of public issue .

Hence, within unequal power structure, we certainly can see policy-making in three main conditions. Some policies are really in the explicit decision-making process, so-called "policy in decision-making", therefore, the focus is more on policy-maker and decision-making power. However, in other cases, powerful player just ignores or inerts to make healthier solutions to be an effective policy mechanism and practice without any real counter-arguments. This can refer to a condition of "non-action policy". More difficulty, some policies have never been raised publicly before, and, perhaps, cannot be raised also in the existing power structure (which in this sense usually refers to cultural and institutional aspects of power structure). In these worst cases, we usually recognize

as policies in a "non-issue policy" condition.

Although these three policy conditions are varies across societies and certainly dynamic, in specific social situations, they are still difficult to change, especially within the short term. Obviously, several HIA cases in Thailand are lock into non-action policy or even in non-issue policy conditions. Searching for decision node or finding sound evidence does not easily help them in influencing healthy public policy, because those policies are not actually placed in decision-making agenda at all. Therefore, the modification of our policy analysis framework is needed in order to provide more useful practical insight for HIA researcher in these policy conditions.

For the non-action policy, such as a policy in supporting organic farming in Thailand, it is no point to start with the existing inactive policy process (including political symbolic actions). It is better to start with understanding policy networks and policy meanings and framing. In other words, HIA will be mainly used in stimulating policy-oriented learning within and across policy networks and in discovering the ways toward better social understanding about the policy issue. At the same time, it is also useful to analyze external factors, which may lead to shock, pressure, and opportunity for policy window, such as EU's banning of Thai pesticide contaminated products. In short run, searching and preparing for policy window is a suitable strategy. In the longer terms, shifting power structure, understanding policy framing and changing rationality can be the expected outcomes, which can be a critical foundation for future policy changes.

For the non-issue policy, such as healthy transportation system in Thailand (except preventing car accident), perhaps, it may not be possible to start with policy networks, since there may be no policy networks (or even no active actor at all). In this situation, the best expectation from HIA in the first step is to provide the evidence, which can help society to frame and give meanings to the policy issue. It may also link to external factors or national dramatic events or moods. Developing appropriate policy framing, and effective communication should be a good foundation for nurturing policy networks and expanding momentum for policy change in the longer term.

It is important to note that for Environmental HIA approach for project approval, may not face with these non-action and non-issue policy conditions, since all projects certainly aims to be actually implemented.

However, for those, who develop HIA for supporting healthy public policy development, these unfavorable policy conditions are quite normal and need an appropriate framework for these specific situations.

6. Conclusion

Although it is still to soon to evaluate the success of this framework, this attempt in itself is already valuable. First, it provides the clear signal that, apart from impact assessment discipline, HIA development needs the critical contribution from policy analysis. Hence, the long-term development of policy analysis as a field of practical knowledge is crucial. Second, in doing so, the collaboration with political scientists is now established and expected to be expanded in the near future. Third, through the participation in this framework development, some partner organizations, such as Sustainable Agriculture Foundation, also pay attention to invest also in developing policy analysis as one of the main functions in their policy works. Last, this framework is now already applied in several activities not

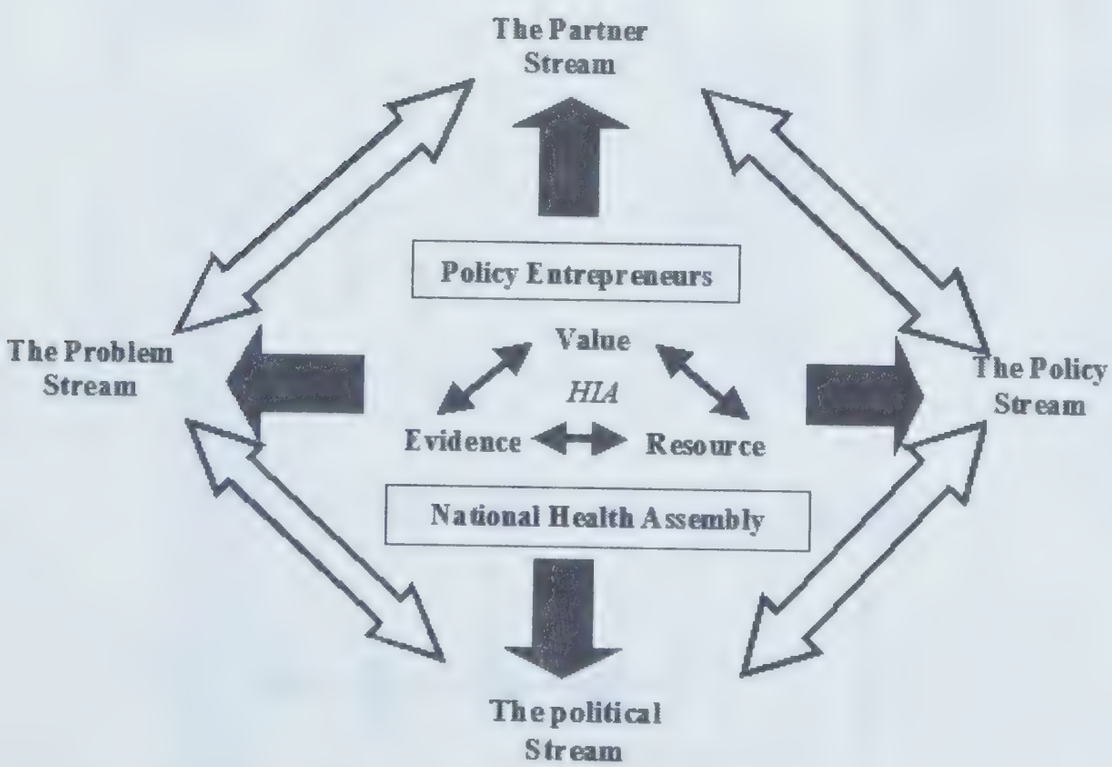

***Figure 1** : The Initial Version of HIA Core Value and Healthy Public Policy Process.*

***Source:** Decharut Sukkumnoed, 2003.*

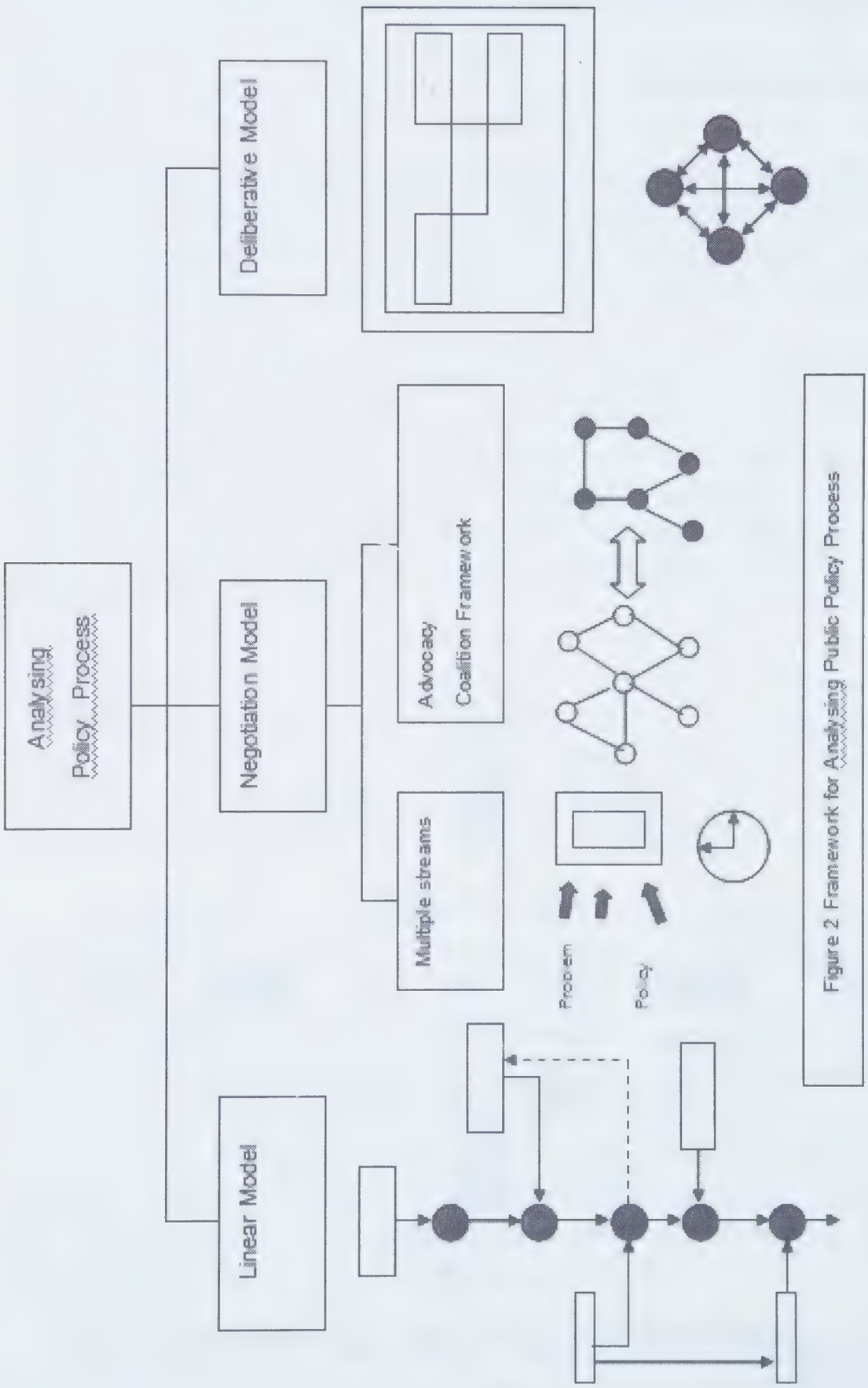

Figure 2 Framework for Analysing Public Policy Process

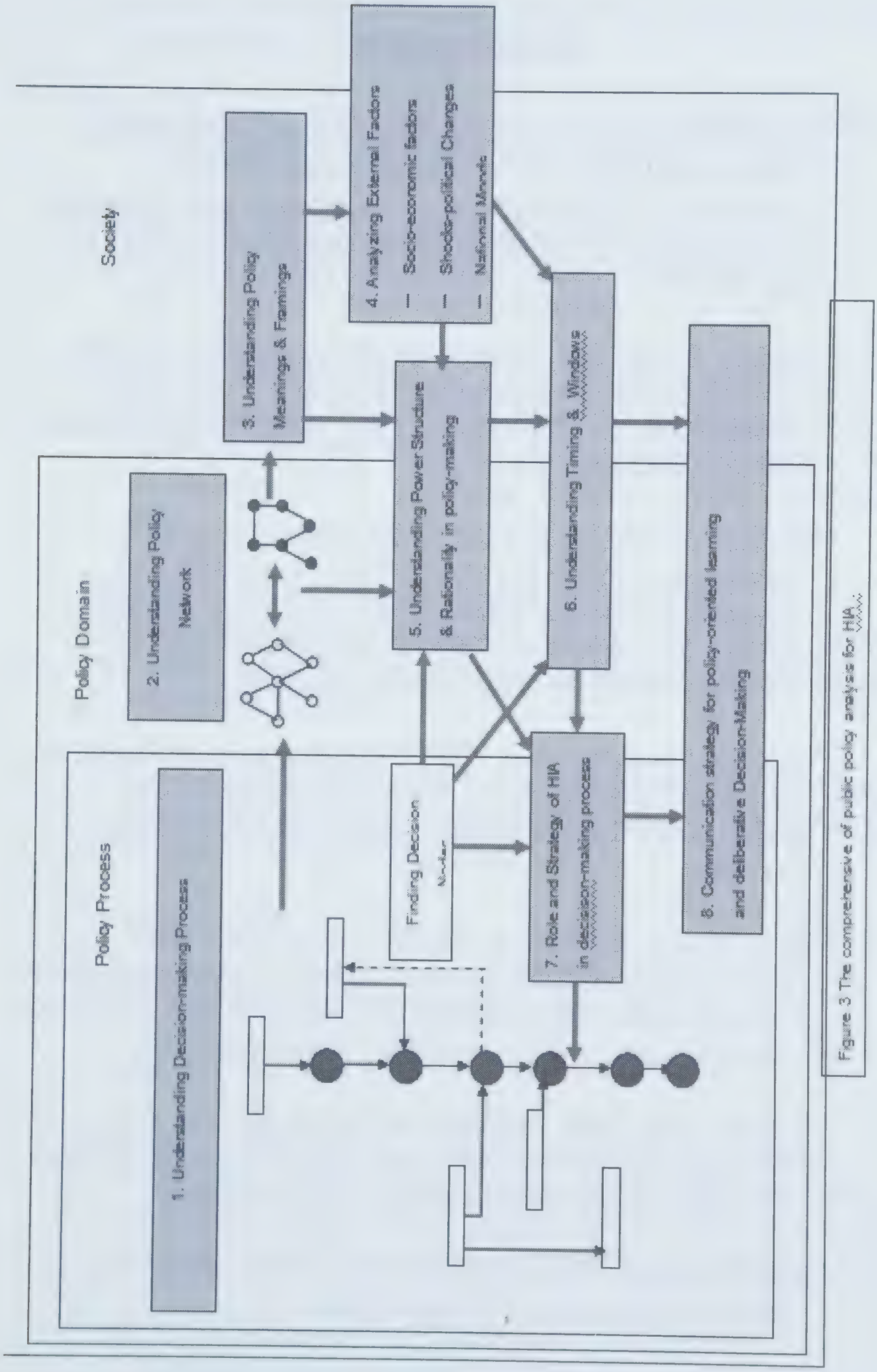
Society
Policy Domain
Policy Process
1. Understanding Decision-making Process
2. Understanding Policy Network
3. Understanding Policy Meanings & Framings
4. Analyzing External Factors
— Socio-economic factors
— Shocks-political Changes
— National Mood
5. Understanding Power Structure & Rationality in policy-making
6. Understanding Timing & Windows
Finding Decision
7. Role and Strategy of HIA in decision-making process
8. Communication strategy for policy-oriented learning and deliberative Decision-Making

Figure 3 The comprehensive of public policy analysis for HIA

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Public Policy Process in Free Trade Agreement of Thailand

Buntoon Srethasirote

Chanisa Klomtong

The Project Policy Strategy on Tropical Resources Based (STRB)

1. Free Trade Area Establishment

Free Trade Area (FTA) is the economic integration for the purpose to remain the least amount tariff from reduction or to eliminate it for goods. The free trade area negotiations are based on the bilateral or regional, not multilateral agreements like in WTO.

It is until many multilateral trade talks failed to meet the resolution, in particular after the breakdown of the Fifth WTO Ministerial Conference held in Cancun, in September 2003. Many countries, then, apparently tend to apply the bilateral and regional integration policy for free trade negotiations. The United States is a good example of this case after its clear declaration to extremely hasten the bilateral and regional trade liberalism.

2. Free Trade Agreement of Thailand

To date, Thailand has already joined in many significant regional free trade groups – APEC, AFTA, ASEM, GMS. During the previous 2-3 years, the Thai government attached the importance on the bilateral agreement rather than multilateral one. These caused its endeavors to expedite the bilateral free trade agreements with several countries. The examples

proving the successful efforts are the Thai-China agreements and the Thai-Australia agreements that already became effective. At present, Thailand is on the process of trade negotiations with over 10 countries such as Peru, Japan, United States, and Switzerland, etc.

The bilateral and regional free trade agreements are regarded as the government key strategies and significant mechanism to link and drive diverse economic policies effectively. For example, the link between Biotechnology Development Master Plan beyond 8 years and Biotechnology Liberalism; State Enterprise Privatization and Service Liberalism based on opening for outsource investment in different services more freely.

Free trade agreements are policies affecting people pros and cons comprehensively; in particular those are dealt with several developed countries. That is because the agreement contents cover a wide range of other areas, rather than only tariff reduction, such as Trade Related Intellectual Property Rights, Trade in Service, Trade Related Environment, Trade Related Labor, etc.

3. Public Policy Process on FTA

3.1 Structure of Responsible-for-Negotiation Organizations

In the initial stage shortly after the clear declaration to launch the bilateral agreements, the government assigned the Department of Trade Negotiations, Ministry of Commerce to the negotiation. Then, due to the many simultaneous negotiations, the restructuring of organizations for negotiation takes place by appointing negotiation committees by countries. Almost all committees comprise the government officials from various ministries and are chaired by the retired government officials, vice ministers committees, permanent secretaries or their deputies. The Minister of Foreign Affairs is another government organization playing roles in the negotiations; its Deputy Permanent Secretary is assigned a Chairman of Thai-Japan Economic Partnership Agreement, and its authorities as Secretary.

In the stage of policy decision making, each negotiation committee will present its stance/standpoint towards FTA to the National Committee of International Economic Policy (chaired by Deputy Prime Minister in charge of economy) for consideration prior to the proposal to the Cabinet.

3.2 Negotiating Process

Each committee's performance is carried out through the meetings of the representatives from ministers concerned such as Minister of Commerce, Minister of Agriculture and Cooperatives, Minister of Finance, and Minister of Foreign Affairs, etc.

In the preparation stage, the Minister of Commerce hired the educational and research institutes to conduct some studies on pros-and-cons impacts from trade liberalism as basic material. After the signing of the tariff- reduction-oriented agreement between Thailand and the People's Republic of China, numerous impacts occurred and were significantly perceived by the public. Therefore, the government is increasing budgets to support the in-depth researches to benefit the negotiation more considerably.

Some committees organized many stages in term of meetings and seminars to hear the diverse views of farmers, private sector, and stakeholders. For example, during the Thailand-Australia FTA drafting, a great number of impacts on meat-and-milk-cows-raising farmers emerged from the tariff reducing scheme and the quota of imported skimmed powder milk, the government sector held several meetings to hear the meat-and-milk-cows-raising farmers' voices and make understanding. However, when the completion of FTA drafting, the Dairy Farmers Organization made movements against FTA drafting in section of the milk and meat cows. Also, they prepared to present the petition against the signing by claiming that the draft was inconsistent with their proposal during the meetings, and that the signing would affect Thai farmers substantially.

The above-mentioned case reflects hinders and limitations of public participatory process provided by the government sector.

3.3 Decision Making Process

The previous decision making process of Thai FTA was implemented by the Cabinet without the proposal for the House of Representatives' consideration; even though, the Senate Standing Committees, academics, and some people groups requested to pass the draft to the House of Representatives prior to the signing. This was because the FTA requirement could lead to amendments to national laws which needed the House of Representatives' approval as prescribed in the Constitution of Kingdom of Thailand, Clause 224.

To go further in this issue, the Opposition raised the questions to the Prime Minister on 26 May 2004, why the signing of Thai-Australia FTA agreement had been omitted the House of Representatives' approval. The Prime Minister explained that "the government has done it based on the authority prescribed in the Constitution. If any doings need the approval of the House of Representatives or Legislation, surely the government will do. Conversely, if asking the House of Representatives to draft each clause of the pact, no any country does.. I assure that the government will not make the country damaged. The government used much of brainpower to deal it extremely. Don't worry"

Finally, the government did not pass the draft to the House of Representatives, just finishing at the approval of the Cabinet, and entrusted the Minister of Commerce to sign the agreement on behalf thereof. To date the implementation of policy decision making on Thai FTA has been governed by the executives, without attempts to balance the decision power through the scrutiny of the House of Representatives. That is completely different from the decision making process of the developed countries such as the United States or Australia, etc.

The reason for signing the FTA agreement, the government gave to the public, was a strategy to maintain the existing export markets. In case of without FTA negotiation, the competitive advantage of Thailand would be increasing continuously. As for the negative impacts, the Prime Minister said, "the private sector must become alert and adjustable. If it is strong, the employment, and economic flow will occur, and the increasing exportation could make reflux of currency as well." And another reason given more often by the government and the government organizations

was the negotiation was based on win-win situation, no one was advantageous or disadvantageous. However, never was the clarification or information released to show those who got benefit, the reasons why some groups got advantages whereas others lost and had to bore those disadvantages, or to make such decision.

3.4 Analysis on FTA Policy Formulating Process of Government Sector

The bilateral FTA policy was formulated since the official declaration of the government. It was a kind of top-down approach, not the social request or getting through the process of common agreement. In addition, it still lacked the analysis on the strategic alternatives.

The slow progress of WTO negotiation was claimed as the major reason for many countries as well as Thailand to expedite the FAT agreement. However, the actual and observable cause was the stance of the developed countries to make efforts taking up many areas of negotiation to protect their own interest as before. This caused the strong protest from both developing and underdeveloped countries that had already undergone suffering from Uruguay Negotiation Round. Then, when the multilateral negotiation in WTO offered less benefit than anticipated, the developed countries, particularly the United States, tended to the bilateral negotiation instead. As soon as the FTA agreements made with the developing countries were making some progress, the United States turned back to WTO negotiation to create, by relying on matters and agendas prescribed in the FTA agreement, the standard for global trade in term of multilateralism in its favor.

Accordingly, it may be said that the current tendency for bilateral FTA negotiation is part of the developed countries' strategy to order the global economic trade in line with their needs. Thailand itself is in such a current that it is convinced that FTA agreement will keep it in the track.

To entrust the accountabilities the structure of responsible organizations is classified by countries and topics of negotiation. Each department/ministry was assigned to be in charge of different negotiations according to its function without the efficient systematic mechanism to con-

sider overall policies and strategies.

The negotiation approach of Thailand is plagued with the rapid stages to make FTA agreement with numerous countries at the same time, as Thai side has a few experienced and competent negotiators when comparing the number thereof to over 10 country parties.

The researches afforded by the government demonstrate only the impacts on macro economy, without the detailed study on negative impacts: how many dairy farmers' households could be affected; how the continual impacts would be, for example. Besides, they also lacked studying the impacts on society, environment, and health perspectives.

Since the components of committee in charge of FTA negotiation are representatives from the government, no ones from the public or stakeholders, it obviously lacks the participatory mechanism for people's decision.

Conversely, for the negotiation process and policy formulation, the government attaches the importance only 3 agencies: Trade Chamber of Thailand; Thai Bank Association; and Industry Council of Thailand. Those have a chance of considering and presenting their point of view on the preliminary commodities, and of working closely with Thai negotiators by providing them with the necessary information, such as joining in the Thai-USA FTA Negotiation Round 1 and 2 held in Hawaii, the United States. While the agricultural sector has few chances to access the negotiation process. The reasons partly come from their low bargaining powers and vague coalition.

The public participation is at the stage of information and comment provision. It is proceeded through meetings and seminars separately held by the various committees, or probably through the researches conducted by the educational institutes. Nevertheless, it is not clearly proved whether people's views and proposals will be included in the policy formulation of the committees or Board of International Economic Policy or not, and how. Many participants in such activities by the government have observed and expressed their concerns that the government's purpose hides from the need of the actual participation, merely justification.

The FTA negotiating process of Thailand lacks procedures. The rules and framework is subject to the executives or the political side, from which is different from parties', especially the developed countries such as the United States. Its process is implemented according to the particular bill called Trade Promotion Authority Bill 2002. Following this Bill, the targets, procedures, and practices of trade negotiating process for the executives and the legislation are wholly and clearly included as well as the distinct practices for public participation in negotiating process.

4. Role of Social Community Sector on FTA Policy

The social community sector having roles in the FTA negotiating process comprises different groups of which activities vary accordingly. Rather, the group working with FTA from the beginning and pursuing it seriously and continuously is FTA Watch. This group has significant roles considerably and will be the target group of the analysis in this report. Shortly after FTA increasingly becomes the public affair of Thai society, various organizations from political sector, non-government organizations, and private sector development organizations pay more attentions to have participation in FTA policy formulation.

4.1 FTA Watch: Process of Social Community Sector towards FTA Policy

FTA Watch or FTA-interest civil society group formed in October 2003 after the completion of Asia-Pacific Economic Council (APEC) Conference held in Bangkok. It is the combination of various workers in different fields, from academics in the state and private educational institutes, independent academics, lawmakers, environmentalists, social activists, and development workers in networks such as Alternative Agriculture Network, Thai Network of People Living with HIV/AIDS, and Consumer Network, etc.

FTA Watch integration is formed as a group network of groups mainly working with FTA liberalism and impacts from globalization. The coordination among the groups effects the integration of the existing networks and expansion of working areas.

The objectives of its operation appearing in the web site: www.ftawatch.org are to provide the public with in-depth information and to communicate with the government sector and public sector in order to create understanding and urge the society to be aware of problems from FTA agreement. It has no intention to lead the country to other countries' colony or to meet the interest of either group. Any agreements having been approved must benefit people in major proportion or else affecting them at least.

One year after establishment of FTA Watch, various activities are carried out in the society to create understanding and awareness of importance and impacts from the ambitious FTA policies of Thailand. The operation strategies can be classified into 3 groups as follows:

a. Knowledge Base Creation

The strategy to create knowledge base is the strong point of the group, as there are some members having been pursuing the negotiation issues for long in term of researches and working fields such as intellectual property rights, drug and public health, small-scale farmers, and bio-resources, etc. The actions of this strategy become the essential foundation linking to other movements.

The FTA Watch's activities under this strategy are the studying the relevant issues in depth such as medicine patent, patent over living organism, traditional wisdom protection, the impacts of FTA on small-scale farmers, technical meeting and seminar organization, meetings for common analysis, etc.

b. Social Movement

The various activities for this strategy focus on creation of understanding and awareness in the society to jointly push FTA policy for the

public affair and to realize the importance to participate in policy formulation. The activities are divided into 2 parts: public stages and public media.

Public Stages

Seminars on FTA issues are held in the central and the regional parts such as ones at Faculty of Education, Chulalongkorn University, Kasetsart University, and Maephaluang University, Chiangmai Province.

To achieve the strategic partnership, the mentioned public stages are mostly organized in close collaboration with domestic and abroad organizations: the Office of the National Human Rights Commission of Thailand, the Senate Standing Committees on Foreign Affairs, Committee on Social Development and Human Security, International Center for Trade and Sustainable Development: ITCSD, etc.

The number of participants in public stages averages 40 to 500 covering regional staff, academics, regional and national politicians, NGO, media and farmers. Considering whole participants of all FTO Watch's stages, there are probably over 3,000 altogether.

Public Media

Audio, CD and VCD are produced to disseminate to the target groups, and some are released to the public via the community radio.

Web site address: www.ftawatch.org is established to disseminate information and communicate with people.

The interviews of FTA Watch members are made via some media for some time to provide public with FTA information and to controvert its contents and idea that the government or government organizations presented.

Press release is made for some time to present the negotiation texts, the request and proposal concerning FTA negotiation along with controversial discussion on ideas of the government or the government organizations.

Bulletin is published monthly to disseminate the movements of FTA negotiation and various issues.

c. Push through Politics and Policy Level

This strategy has an objective to create the public participation in policy decision making. The followings are the sample activities:

- Submission of the unsealed letters to the Prime Minister, Speaker, Chief of Justice.
- Appeal to the Senate Standing Committees to consider and monitor the government's implementation.
- Uniting 400 oriented-social-interest people comprising farmer groups, people living with HIV/AIDS, independent development organizations, academics, representatives from state enterprises, Electricity Generating Authority of Thailand, and small-scale entrepreneur federation on 28 June 2004 to demonstrate to the Government House for presenting information to the public and proposing the request to the government.
- Procession to the embassies of select countries having free trade area negotiation with Thailand such as the Embassy of the United States on 29 June 2004, and again lately on 1 April 2005.

Impacts from Public Policy Changes

The numerous activities that FTA Watch carries out along with the various approaches used to cope with different situations show the vital role that FTA Watch plays in the public policy process in term of policy actor and facilitator.

Many impacts emerging from such these activities effect the various aspects identified as follows:

- The free trade area negotiation eventually becomes the public affair. Every single of mass media keeps their intention on it continuously. The concerns of the government and private organizations, academics, and politicians are stimulated. The FTA-related events proliferate significantly after earlier FTA Watch's moves.
- The FTA-responsible government organizations have changed the policy decision making process by providing public hearings for stakeholders. More representatives of FTA Watch and of educational institutes are invited to join in determining the negotiation

position during the meetings: Department of Intellectual Property, Japan-Thailand Economic Partnership Agreement by the Ministry of Foreign Affairs.

- In addition, the responsible government organizations such as Department of Trade Negotiation, the Ministry of Commerce, the Ministry of Foreign Affairs create the web sites to disseminate FTA-related information, on which people are allowed to express their ideas as well.

- The government pays more its attention on preparative researches prior to dealing the negotiation.

- The activeness of the educational institutes on FTA issues arose during the previous year. There were a great number of studies and researches relevant to FTA conducted by undergraduates and graduates, particularly the interviews by members of FTA Watch averaged over 10.

In spite of harder efforts of FTA Watch, there are no changes of "policy or standpoint" of Thai government under FTA negotiation. This matter will be analyzed later.

4.2 Activeness of Thai Society on FTA Policy Formulation

After the bilateral free trade area becomes the public affair in Thai society, apart from FTA Watch, there are more various organizations participating in policy decision process in different manners:

4.2.1 Knowledge Base Creation

The organizations dealing with the knowledge base creation on FTA are as follows:

- National Economic and Social Advisory Council is assigned to study the in-depth impacts on drug patents and medical assess as well as the impacts from and the policy decision formulating process of free trade area.

- The Thailand Research Fund (TRF) contributes to the FTA-related studies in different subjects such as FTA and environment, impacts on aquatic products, etc.

- The responsible government agencies conduct many

researches as the complementary information before negotiation or to buffer the impacts of negotiation. Those researaches are the Impacts on Industrial Products by the Office of Industrial Economics, and the Cushion Plan for Affected Milk Cow Raising Farmers by the Office of Agricultural Economics.

4.2.2 Monitoring the Government Operation

The House of Representatives Sub-Committees, and the Senate Standing Committees, such as the Senate Standing Committees on Foreign Affairs, Committee on Social Development and Human Security, and Committee on Justice and Human Rights have the significant roles in this area.

The Committees invite the ministers, executives, negotiators, and government officials relative to the free trade areas to join in discussions on FTA during the seminars.

The Senate Standing Committees on Foreign Affairs having direct connection with FTA negotiation has been monitoring this subject seriously and continuously. It even accessed the information in the rural areas of the North to track a lot of effects from tariff cuts scheme in vegetables and fruits under the Thailand and China Agreement. Also, it flew to the United States to hear point of view and information from the concerned organizations. Furthermore, it still encourages the FTA-related researches, cooperates with other organizations to open public stages, and invites the negotiators to give FTA information.

The implementation in this area is rather limited since the representatives from the government organizations could not reveal the matters as a whole somehow. They often claimed that the negotiation was pending, so they could not disclose, or the negotiation had been conducted secretively (Thai-USA FTA). Some reasons were not clear excuses because they were only following the political policies. However, this implementation benefits public to access more information, and encourages the government and political sectors to be aware of close attention and serious watch of the House of the House of Representatives.

4.2.3 Public Communication

Mass media pay more attention to follow and release the con-

tents of FTA negotiations via newspapers as scoop, televisions, and round-table panel by Bangkok Business Newspaper, Thai Journalists Association.

4.3 Analysis on Social Community Sector's Role in FTA Policy Formulation

From FTA Watch moves to push FTA policy formulation for public affair and open policy window for people, there are some changes that the government sector did with its poses and process in formulating policy. But, the point is those changes occurred at the administrative level or in organizations responsible for contents of negotiation such as the Department of Intellectual Property, Department of Trade Negotiations, Food and Drug Administration, not at policy level or decision making process. All decisions are subject to the Committee on International Economic Policy, the Cabinet, lacking the mechanism of the direct and indirect people participation. That is no representative from people sector joining as a committee.

At the same time, the government makes many efforts to avoid proposing the FTA draft to the House of Representatives for its approval according to the Constitution Code 224. This is deemed that even the House of Representatives as the people representatives is blocked to join in making decision of policy and to access the information.

Even though some responsible government organizations have agreed to the public sector's requests, the final decision is closed or belongs to the high executives and political side only. Therefore, the resolution may be converse with the government agencies' proposals or the public sector's requests; likewise, the controversial issue on milk cows and meat cows occurred during the Thailand-Australia FTA negotiation.

The reasons for no changes in broadening the public participation in FTA decision making process are that the government takes an effort to maintain the existing decision making process: monopolization or centralized decision making under the Committee on International Economic Policy, the Cabinet. The other is no sufficiently harder pressure from the society to push for those changes in decision making process.

The closed decision making process and centralization is main cause leading to the lack of scrutiny mechanism and no response to public's requests.

Apart from the community sector confronts the obstruction of the participation in the decision making process to create the transparency and good governance, they also have the limitation of:

- Thailand has the free trade negotiation with over 10 countries at the same time. Each contains the tactics and a lot of legal issues that become a huge burden to keep pace with the continuous changes of situations.
- The negotiations full of various issues are too complex to make media and public understand.
- The main media such as televisions and central newspapers is limited in releasing information. Consequently, it is a very difficult situation for press to present the information different from those of the government in general.

From the distinct impacts from the tariff cuts in vegetables and fruits under Thailand-China agreement, the movements of FTA Watch and other organizations, the more public interest on the controversial issues on the appeal of USA such as the increase in patents over living organisms, opening trade in genetically-modified organisms (GMOs), etc., the Thai society still has to remain its awareness how much important and essential to have participation in FTA policy decision making, which becomes the key influence on changes in decision making process of the political side.

The Driving for Healthy City through Healthy Public Policy: High-Rise Building in Chiangmai

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Health or well-being has the broad meaning covering to physical, mental, social and spiritual well-being that is the human's primitive right. The development of well-being shall focus on human as the main target by giving significance to factors which affect to better well-being, not by the medical service only; however, the secure social, economic, political and environmental components are involved. This new concept allows every section to provide significance to any project, plan or policy influencing to people living which will also provides directly and indirectly impacts to public health. Healthy Public Policy (HPP) becomes the important concept to enhance health because it expresses social concerns and accountability given to human health while focusing on creating supportive environment at economic, social and political aspects for healthy society.

HPP tries to combine the concept of health and the concept of public policy of all sectors with the aim to reach human well-being. Public policy extends the scope of health promotion beyond public health service toward the involvement in non-health sector. HPP also concerns on policy alternatives entailing the balance of social, economic and environmental development. Generally, most people recognize that public policy is the announcement by the government or the administrator rather than the public participation of public in expressing their opinion or needs. Unsurprisingly, the previous public policies caused serious impacts to human health such as; the policy of Thailand Eastern Seaboard Development that caused damage to environment and security of communal living, the policy of mono-cropping which emphasized on applying

chemical that left in the products and environment.

Public policy process arises from public participation by jointly studying for the best option based on the equality and justice in the society; such learning process becomes the core principle of Health Impact Assessment (HIA) in Thailand. The consequence arising from HIA is the set of recommendation with the evidences reflecting the importance of well-being in the society and finally it is used to support decision making process. HIA of high-rise in Chiangmai City is a sample of the public policy process arising from public participation. Basing on learning process and public that is the obvious learning style of participation and use of thought to change the public policy which people sees that it affects to the health of the community.

The Problem of Constructing High-Rise Building in Chiangmai City

Chiangmai city is established in 1296, governed by absolute monarchy. Chiangmai is prosperous because it is situated on the suitable location. With the accumulation of its own unique culture and tradition, local language and architecture as well as the wealthy environment, Chiangmai people or Lanna in the past, gentle, optimist and friendly. Chiangmai had been the colony of Myanmar, Thonburi, and Rattanakosin, then such dependency had been repealed and it became one part of Payab County, then its status was subsided to be a province of Thailand where the capital is in Bangkok. As a capital, Bangkok automatically becomes the center of development at all aspects such as; commercial business, education, industry that caused troubles of; since immigrate to the capital; traffic jammed, air pollution, water pollution, congested community, vice and crime source, teenagers' unlawful congregation, lack of life and property safety. To solve such problems in the capital, the government by the chief executive has set Chiangmai as the main city to expand development in the north region without any comment expressed by Chiangmai people. Chiangmai has followed the same track of development as Bangkok did. Chiangmai is currently the center of education, tourism, real estate, some kinds of industry and it is found that immigration of rural people to the city is increasing. The simple society

is rapidly changed by the economic growth, many lands are sold to entrepreneurs for constructing large residential buildings, department stores and hotels to support people and tourists coming into the city. From the report, it is found that in 1990 there were many building construction projects which almost deleted what Chiangmai city was used to be, the beautiful architectures and temples were obstructed by high-rise building, the lands at the riverside were possessed by the outsiders, high-rise buildings were constructed on many positions at the riverside, there were many impacts occurring to the way of life of local people in the community as follows:

1. Traffic jammed: since people from outer districts coming to work in the city but without good transportation, most people own vehicle for traveling. From the statistic report of Chiangmai transportation office, it is found that in year 2000 total number of registered vehicles in Chiangmai were 712,468 while the population in the whole city was 1.6 million.

2. Air pollution: since the city is situated in the valley, air cannot simply ventilate, dirt is cumulated in the air together with the pollution from traffic, burned garbage, and construction that cause worst air quality.

3. Insufficient public utilities: since the construction of residential and commercial building is extended, the infrastructure of public utilities is inadequate. The large buildings use pump to store water for consuming. Without suitable public drainage and garbage disposal system, people who live near the large buildings are in trouble.

4. Mislanduse: as Chiangmai is the center point of many things, the entrepreneurs need to invest although the Act of City Plan is announced to control the land use, there are the constructions of many building types on the improper areas.

5. High land value due to speculation: the land is purchased for speculating profits. As the policy of city development, the land price is higher and it becomes the excuse of entrepreneurs to construct high-rise building on their own land.

6. No garbage landfill: as Chiangmai city is more crowded,

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the volume of garbage is high. In addition, the current behavior of consumption causes much unused synthetic stuffs which are hard to destroy or cannot be destroyed and become the serious problem of disposal.

The conflict of high-rise building has become the most serious problem during the 6th National Economic and Social Development Plan (B.E. 2530 – 2534) and has continued to the period of the 7th Plan (B.E. 2535 – 2539). When the government of Gen. Chartchai Chunhawal created the policy to change the battlefield to the commercial field, the investors from Bangkok used Chiangmai as the base of expanding investment to the frontier cities such as Chiangrai and Mae Hongsorn. Besides, at the same time, Thai and foreign businessmen evaluated that before Hong Kong was delivered to China, businesses should have been moved to this region and Chiangmai should be an attractive investment position because of its capability and there was no traffic difficulty. The investors constructed many high-rise buildings as the offices and condominiums to support business base moving from Hong Kong but when the government had no regulations for high-rise building, the conflict of high-rise building construction had continually occurred in Chiangmai.

Entrepreneurs could construct high building in every section or around beautiful scenery or close to respectful ancient religious places because the overall city plan was not regulated the use of land in vertical dimension. Regarding to the regulations of the overall city plan, the height was not imposed except only in the conservation area. Besides, the regulations of the overall city plan contained many weak points, construction of high-rise building in many areas was not illegal but it was not fair to construct because it provided critical impacts to people who had previously lived such as it obstructed sunlight and wind, houses were damaged while constructing large building, it obstructed the scenery of Doi Suthep where people had been used to see all the time before the construction of the high-rise building. These problems are raised by local people;

"The construction area for condominiums is not divided, people who live at the bottom is unlucky while constructing, cement gets into the house as dust, it touches your skin, very itchy, when it is built higher, and the wind blows. This had never happened before, the roof is broken" (dated July 3, 2002)

Before 1991, it was the period of bubble economy expansion, many high-rise buildings as condominiums were constructed for selling to customers who live in Bangkok as the second home or they would buy for profit because at that time purchasing land and immovable property for profits was very vigorous. There were many applicants submitting approval request for high-rise building construction; especially before regulating the ministry law to prohibit high-rise building construction, the land was enabled to increase price because Thai law was not retroactive. If the landlord was approved to construct high-rise building before 1991 and this license could be continually renewed at the rate of 20 Baht per year, it was found that there were more than 10 landlords applying for license renewal to construct the building but there was not any construction at the present.

In the early of year 2002, there was announcement of Chiangmai municipality to request loan amounted 213 million from Local Fund Commission to construct the building of municipality office with 12 storey because the former building had been almost 70 years and people could not be provided convenience because of its small place. Such news stimulated the movement of many sectors. People organization network prosecuted to administrative court to hold the 12 storey-building construction because it would obstruct scenery and it would be situated near Ping River which was prohibited in the regulations to construct high-rise building within 100 meters around. In addition, they urged Provincial Governor to reconsider this decision especially the reduction of building storey to the suitable size. To support the decision making process of high rise policy and the social demands for participating in the process of public policy formulation, PhD. Pongthep Wiwattanadej and research team from Chiangmai University conducted health impact assessment of high-rise building in Chiangmai city in 4 dimensions; physical, mental, social and spiritual health, from 2,477 people of sample group living in, around high-rise building (over 16 meter high building), and general people in the area of Chiangmai municipality, Changpuak municipality, Suthep Tambon Administrative Organization and Nong PhaKrang Tambon Administrative Organization where there were 199 buildings in total.

The result of the study in each health dimension found that people living around the building and general people got the health problem more

than those who lived in the building. It showed that the health problem might be indirectly caused by high-rise building such as heat dome phenomenon in the city area; since these high-rise buildings would obstruct the wind direction. In the meantime, using electrical appliance of those who lived in the building would increase accumulation of high temperature and cause various types of toxic in the air which should harm to respiratory system. Besides, high pressure condition and heart disease might be caused by stress as a result of mental and social health problem. Regarding to the assessment of mental health, the sample group agreed with the negative impact arising from high-rise building such as; the anxiety of lacking good fire protection system in high-rise building; the irritation because high-rise building could increase the temperature in the city. These ideas were different between those who lived in the building and those who lived around the high-rise building and general people, it demonstrated that people living around the high-rise building and general people got the mental impact by the high-rise building. The tendency of assessment result in society had the same direction, those who lived around the building and general people got more social impact than those who lived in the building. The assessment in spiritual dimension obviously showed the feeling and realization in value of Chiangmai city which had been the history of Lanna territory for over 700 years. However, most of sample group thought that high-rise building would damage Chiangmai, the historical city of Lanna.

This study proposed the set of recommendations used as the guideline of constructing high-rise building in Chiangmai as follows:

1. Zoning Area shall be set by determining location allowing the constructing high-rise building. It shall be in the area where ecology and conservation of ancient city will not be affected.
2. The law of high-rise building shall be revised or improved to fit the specific context of Chiangmai. The Code of Construction which covers all over the country does not fit with social context of Chiangmai.
3. The license of high-rise building construction for non constructed building in the municipality and nearby Tambon Administrative Organization shall be hold.

The Driving Process for Public Policy

Chiangmai Development Policy determines Chiangmai as the center of everything. Using Chiangmai as the base of investment expansion to frontier attracts the investment for office building construction without regulation of the building height except in the conservation area. The high-rise buildings are legally but unfairly constructed on the remaining locations since the high-rise construction shall obstruct sunlight and wind, while driving foundation poles the nearby buildings are damaged as well as it shall bar the beautiful scenery of Doi Suthep and Ping River.

Driving the public policy of high-rise building construction in Chiangmai municipality area has the main condition which links network groups to join this movement and the social motivation which is different from other cities is the identity of Lanna history and traditional culture. The trend of culture protection which is adjusting from time to time; including the presentation of problem arising from high-rise buildings in community area without public utility system arrangement causes the local people distressed in physical, mental, social and spiritual troubles. Chiangmai people need to participate in determining direction of city development as it shall be. The process of driving public policy has started from the movement of those who were distressed and the social worker group since 1989 but the movement at such period was the complaint of some people groups, general people were not clarified, there was not enough support from the society. Such complaint was not proposed the option, it was just the objection of the high-rise building construction as appeared in the newspapers:

Siamrath Newspaper, page 4, June 9, 1989, the representative of those who lived at the foothill of Doi Suthep submitted letter to Chiangmai City for holding the project of 17 level-condominium construction.

Matichon Newspaper, page 15, July 11, 1989, the Monk Pho Rangsri, the Vice Chief Priest of Chiangmai submitted letter to the Governor, Mayor to oppose the construction of condominium because it would obstruct scenery and damage the image of ancient places especially the construction near or close to the temples.

Thai News Newspaper, page 3, July 16, 1989, People unsatisfied at least 2 condominiums located close to Ping River, in addition to obstruct the Ping River scenery, they hoped to use water in Ping River for water supply and to drain wastewater.

Siamrath Newspaper, Sapdawijarn, page 64, January 28, 1990, Reuter Reporter was worried that Chiangmai where the beautiful nature would be changed and withered because skyscraper condominiums seized location and air.

Thairath Newspaper, page 1, 16, February 6, 1990, Fah Hom People opposed condominium near temple, pray to Three Kings Monument to curse investors, senior priests and students jointly protested condominium construction.

The process to clarify most people starting from the group of specialists from union careers who opened the public stage for all sectors – local people, local politicians, experts, to constructively and continuously express idea and perspectives. At the same time, HIA of high rise building was carried out by health specialists, the occurrence could propose the option as the guideline of high-rise building construction in Chiangmai. HIA was operated before the election of Chiangmai Mayor; therefore, such assessment was pushed into the policy process by the direct election of Chiangmai Municipal Councilor. Person who was elected specified the problem of using lands in municipal area in the development plan of Chiangmai municipality but there was no obvious solution. The driving process in policy clearly showed that the people participation was enhanced by the result of such study presented through public forums; general people, experts, specialists had joined and expressed the additional opinions. Information; meanwhile, was publicized to various medias such as local and national newspapers, television broadcasting, radio interviewing, the knowledge was expanded to the individual group of people as the critical mass who was interested and understood the problem and it caused the social movement by gathering 11 organization networks in Chiangmai province to meet and arrange stage for public comments. The draft of letter of intention on Chiangmai sustainable development was the outcome of this movement. This letter to hold the construction of new office building of Chiangmai municipality was submitted to the relevant and responsible work unit. It was

unnecessary for Chiangmai municipality to loan for constructing a large office building to support service because the service could be expanded to each sub district. At the same time, the letter of intention was submitted to the Prime Minister and it was responded by the government. The meeting of natural resources and environment committee was arranged to explain and make the agreement between the representatives of the organization and Chiangmai municipality. According to the summary from discussion, the local administrators considered the possible option by reducing the number of storey from 12 to 4 on the ground and the construction should be carried out in accordance with Lanna architecture.

The social movement process started from the interest in policy problem that contradicted to the people's feeling of which disagreement of policy. The pressure caused some people upset and they continually complained until the attention was expanded. When big project was proposed by using budget from tax for constructing high-rise building, the point of disagreement was increasingly occurred. The solution was from the searching of knowledge by; evaluating what health impact was caused by policy; analyzing the option for those who determined the policy; including finding the channel to be pushed by political section by using the reference of the city of water; and directly submitting the issue to the Prime Minister. The response could obviously push the change in policy of high-rise building construction of Chiangmai municipality.

HPP in case of high-rise building was a process to present the benefit of health impact assessment that caused the movement in the social and political parts based on knowledge. The lesson learnt could be summarized as follows:

1. HIA allowed specialists to learn that the driving of public policy should give a chance to all sectors to jointly propose, exchange opinion on the problem, the existing information and to give value of the overall good well-being not specific in material or economy.

2. The issue of health impact from high-rise building became the public problem attracted by Chiangmai people, they dared to express opinion which was supported by study and focus on the goal of Chiangmai development.

3. Information of health impact would be presented in both positive and negative way based on morally using technical matter with the participation of relevant stakeholders and should have solution for all of them without any contradiction.

4. The process of HIA allowed local administrators to realize the importance of people power that should have role in determining public policy. The result of this movement caused person who set the local policy had to adjust project of high-rise building construction on Ping riverside.

5. The implementation of HIA should not be stopped when the study was end and when the advice was given. The public communication with appropriate channel and period should be continued in order that the relevant stakeholders would know and it would create the social movement; therefore, the process of public communication was very significant. Besides, the power of people who participated in the process could stimulate the attention of mass media and the point of driving process would be seen important.

6. Having personnel in health sector to join the study should affect to the reliability of information of health impact assessment, people should realize and see that it was close to them and affect to their health, there were more people to express their opinion and advice.

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PART III

Health Impact Assessment of the Eastern Seaboard Development Program: A Case Study of Mab Ta Put Industrial Estates

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Introduction

Ask the Thai government officials to name the most successful story of an industrialization program in Thailand, and they would tell you "the Eastern Seaboard Development Program" and its related stories. At the same time, if you asked the Thai NGOs or civil networks to identify the most visible example of serious environmental and health impacts in Thailand's development experience, the answer would also be "the Eastern Seaboard Development Program". The Eastern Seaboard Development Program is, thus, the most obvious case showing "the Two Sides of the Coin" from the Thai development experience. An issue worthy of a great concern here is that the Thai government still uses this program as the development model for other regions of the country, namely the Western Seaboard and Southern Seaboard Programs, despite serious complaints by the local people on their negative impacts. Therefore, if we wish to develop the Health Impact Assessment (HIA) to be a tool or mechanism for influencing the healthy public policy in Thailand, "the Eastern Seaboard Development Program" could be used as one of the inevitable but promising case studies, both in terms of academic and social mobilization.

The HIA carried out on the Eastern Seaboard Development Program is the retrospective case study, aiming to gain more experiences and knowledge on health impact assessment, as well as, to find the better ways in protecting and promoting the local people's health. However, due to the limited time and resources, this study had focused only on the Mab Ta Put industrial estate area in Rayong Province, the heart of the Eastern Seaboard area.

The paper will start by providing background information on Eastern Seaboard Development Program, Mab Ta Put industrial estates, and Mab Ta Put Communities. Then, conceptual framework and methodologies will be introduced. The forth and the fifth part of the paper will present biophysical and socio-economic environmental changes, as a main determinants for health impacts. After that, the analyses of related health impacts will be explained, following by the analysis of public policy process. Last, as one of the main purposes of HIA, policy recommendation will be provided.

Background Information

Eastern Seaboard Development Program

The Eastern Seaboard Development Program was first introduced during the Fifth National Economic and Social Development Plan (1981-1984), when Thailand started changing its economic development strategy from import-substitution to export-led industrialization. The Eastern Seaboard Development Program is the comprehensive plan for developing Thailand's eastern region to be the main industrial zone for the export-led industries, creating new jobs to alleviate high unemployment situation in the country. It is the largest regional development project to date that has ever been implemented in Thailand. The main components of its plan[1] (Figure 1) are:

[1] *Narong Tawsuwan, 1986. Some Factors Affecting the Expectation of Local Farmers in Socio-economic Situations After Eastern Seaboard Development Program: The Study of Mab Ta Put Communities. Master Thesis Kasetsart University, Bangkok. (in Thai)*

Figure 1: *Map of Eastern Seaboard of Thailand*

(a.) **Natural Gas Pipelines** from the Gulf of Thailand and Gas Separation Plants at Mab Ta Put, Rayong Province
(b.) **Mab Ta Put Industrial Estate Area**, at Rayong Province, for Petrol-chemical, its downstream industries, Petroleum refinery plants (including power plants in these estates) and Industrial Seaport
(c.) **Lam Chabang Industrial Estate** for light industries in Chon Buri Province
(d.) **Chacheongsao Industrial Zone** for light industries in Chacheongsao Province
(e.) **Lam Chabang Main and Industrial Seaport** in Chon Buri Province and its transportation networks.

The Eastern Seaboard Development Program has been recognized for it very successful planning scheme for industrialization, since it was able to stimulate the establishment of about 40 industrial estates, both inside and outside the target areas. It generated the total investment of 420 billion THB and created 460,000 jobs (comprise of 130,000 direct employments and 330,000 indirect employments). Within two decades, a total value added in the industrial sector in this region increased 3.2 times, leading to a three-fold increase in the Gross Regional Product[2].

Rayong Province, which has been the location of Gas Separation Plant and Mab Ta Put Industrial Estates, become the hearts of the Eastern Seaboard area. Almost 20 industrial estates have been established in this province alone. The total number of industrial factories was increased very sharply, especially during the period of economic boom (1992 to 1996). Now the province is the site of up to 1,139 factories, with a total investment of 310 billion THB and direct employment of 70,000 jobs[3]. The core industries in Rayong are petrol-chemical and plastic industries. While the share of the industrial sector in Rayong's Gross Provincial Product has increased from 31.1% in 1981 to 67.3% in 1997, the share of the agricultural sector has been drastically reduced from 35.3% to 5.3% in 1997[4].

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[2] *National Economic and Social Development Board, 2000. Development Situation and Trend in the Eastern Region. Document for Seminar on "The Visions of and Approaches for Regional Development by People Sector in the Ninth National Development Plan" NESDB, Bangkok. (in Thai)*

[3] *Kanuangnij, 1998. Factory Visits Activity. Copied Document. (in Thai)*

[4] NESDB, 1997. Gross Provincial and Regional Product. NESDB, Bangkok

Mab Ta Put Industrial Estates

Mab Ta Put State-own Industrial Estate was firstly introduced in 1981 after the success in natural gas exploration in the Gulf of Thailand. The industrial development in Mab Ta Put area comprised of two main parts; industrial estate and industrial seaport. An expropriation Act was implemented in 1984. The construction was started in 1987 and finished in 1990. Firstly, the total industrial area of the estate was only about 4,200 rai. However, after petrol-chemical industry was boom, the higher demand lead to industrial area expansion to about 7,000 rai[5] . The expansion was done partly by changing buffer zone into industrial area and by land reclamation projects, both leading to serious environmental and health impacts.

Presently, there are 59 factories in the estate, with the total investment of 374 billion THB and 11,500 jobs. Most of factories are heavy industries and also heavy polluting industries. From total 59 factories, 32 factories are petrol-chemical industry, 7 are chemical and fertilizer products, and 8 are steel and iron industry[6] (Figure 2).

Figure 2 *Map Ta Put Industrial Estates*

Apart from Mab Ta Put State-own Industrial Estate, there are two private industrial estates next to the state-own industrial estate. Eastern Industrial Estate has about 2,500 rai of industrial area, comprising of 20 factories with total investment of 60 billion THB and 2,600 jobs. Padang Industrial Estate has about 500 rai of industrial area, comprising of 3 factories. Most of the factories in these two estates are chemical, petrol-chemical, and steel factories[7] . However, due to their smaller sizes and the same location and effects, local people always refer to these three industrial estates as Mab Ta Put Industrial Estates. Therefore, the word "Mab Ta Put Industrial Estates" will be used in this study

Mab Ta Put Communities

Twenty years ago, Mab Ta Put was only small rural farming and fishing community. In 1978, the population of Mab Ta Put community was only 8,434, within the area 14.1 Sq.km. In 2000, the area of Mab Ta Put Municipality was expanded to 149 Sq.km. and the population was increased to 31,625. In 2001, the boundary of Mab Ta Put Municipality was expanded again to 165 Sq.km. Nowadays, Mab Ta Put Municipality comprises of 25 communities around the industrial estates.

Although Mab Ta Put was firstly introduced as the symbol of national brilliant for industrial development, it becomes national-wide recognition due to serious air pollution problem. Mab Ta Put Industrial Estate alone has almost 200 smokestacks, which can release pollutants to 25 communities around the estates (Figure 3). After 1997, when a local public school had to be immediately closed down (and, later, moved out from this area), due to serious air pollution and health impacts, the pollution problems in Mab Ta Put area have become well-publicized and known to Thai public as the most obvious and serious case of undesirable impacts from industrialization.

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[5] *Penchom Tang and Walaiporn Muksuwan, 2002. People Perspective in Health Impact Assessment of Mab Ta Put Industrial Estate, Health Systems Research Institute, forthcoming. (in Thai)*

[6] *Penchom Tang and Walaiporn Muksuwan, 2002. Already mentioned.*

[7] *Penchom Tang and Walaiporn Muksuwan, 2002. Already mentioned.*

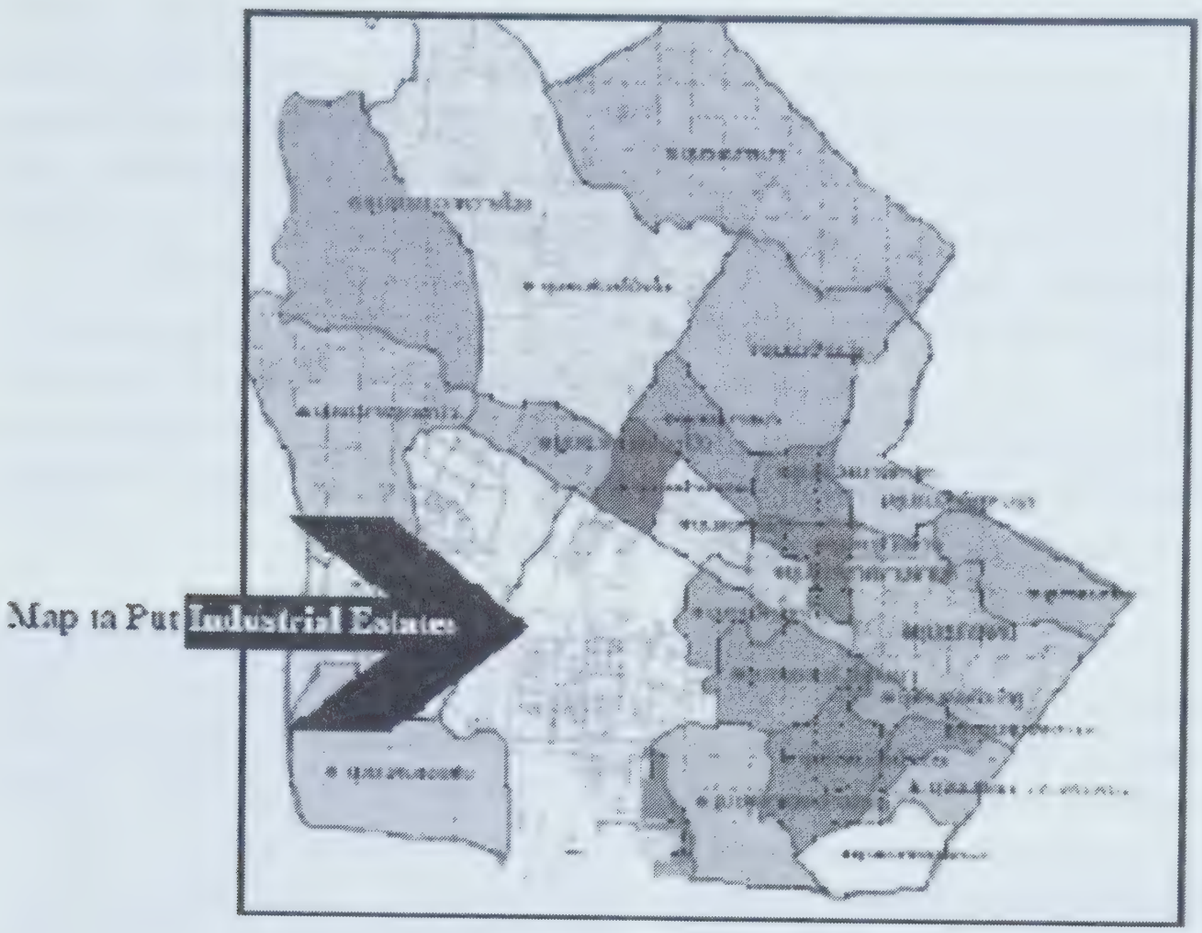

Figure 3: *Communities around Map Ta Put Industrial Estates*

Note: Different colures indicate 25 communities around Ta Put Industrial Estates

Conceptual Framework and Methodologies

According to the core element of the drafted National Health Act, health is defined as **the state of human complete well-being in four aspects of health, namely physical, mental, social, and spiritual health**[8] **.** Therefore, in this paper, the positive and negative health impacts do not signify only in terms of the occurrences of a disease and disability, but also in terms of the health status and well-being, which can be changed after the introduction and implementation of the development program.

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[8] *Health Systems Reform Office, 2001. The Core Element for Drafting National Health Act. HSRO, Bangkok. (in Thai)*

The WHO's health and environment cause-effect framework (or DPSEEA model)[9] has been applied to this study. This framework divides causes and effects into five levels or steps. First, each specific policy, program, or project will be recognized as the **driving force** of the overall potential health impacts. Second, this driving force (industrial development in this case) will lead to the increasing in environmental and social **pressures**. Third, these pressures might cause the changes in the **state** of environmental and social quality, after which (the fourth level), it leads to the **exposure** to the environmental pollution and social problems and end up with (fifth level) the general and some specific health **effects**.

Therefore, WHO recommended that, **actions** to protect and promote health can be set up to fit with different levels within this framework. For example, the actions can be (a) the reallocation of health cares resources according to increasing health **effects**, or (b) the implementation of an effective emergency plan to prevent the chemical **exposure**, or (c) the introduction of a comprehensive environmental **state** monitoring system, or (d) the selection of clean and appropriate technologies and industries to reduce environment and social **pressures**, or (e) to review or change development policy or **the driving force**.

To develop the framework of action for this case, the evidence and concerns showing the potential health impacts, including the changes in pressures, states, exposures, and effects, from this industrial development driving forces have been collected, checked and discussed by means of:

(a) **Literature review:** including the overview of the program, environmental quality reports and statistics, the socio-economic surveys from different communities around the estates, the newspaper reports on chemical accidents and contamination, and the government resolutions for environmental and health protection for this area.

(b) **In-depth interview** with key informants in some selected communities and government organizations.

(c) **Focus group discussion** with the leaders from local communities in this area by using "community risk mapping" and "body risk mapping" as a tool for systematizing local practical evidence and its following discussion (Figure 4).

[9] *WHO, 1997. Health and Environment in Sustainable Development: Five Years after the Earth Summit. WHO, Geneva.*

(d) **The ecological study** by comparing the changing in out-patient ratio of different groups of diseases between Rayong and the central region (including the Eastern Seaboard area) and the whole kingdom over time.

(e) **Workshop for various stakeholders:** including local leaders, local and central governmental officers, project owners, academicians, and policy makers, both in public scoping and reviewing phase.

(f) **Presentation in the demonstration of National Health Assembly** (in healthy public policy session) to national health reform parties and alliances.

***Figure 4**: Community Participation in HIA*

Bio-Physical Environmental Changes

From the literature review and interviews, it is clear that, the establishment of industrial estates and factories in this area leads to the changes in bio-physical environment in many aspects. The air pollution and related health impacts has been the most publicly well-known environmental problem in this area. Furthermore, in each year, there are many accidents related to chemical processing and transportation. Lastly, illegal hazardous waste

dumping and chemical contamination in water resources and food chain have also been aware by the local people.

According to WHO's DPSEEA model, the industrial development is the driving force causing hazardous chemical uses and pollution in this area. The increasing chemical uses and pollution become the pressure for the local state of environmental quality, which can be seen in various ways, as shown below.

Air Pollution

Twenty from Twenty-five communities stress that air pollution, observed by various kinds of terrible smell, mainly from SO2[10] and VOCs (like Benzene, Toluene, Styrene)[11] , is one of their main concerns on health impacts of industrial estate development. It is clear for both people and authorities that this terrible smell come mainly from petrol-chemical and oil refinery industrial production in the area. Their concern is that these types of smell do not cause only disturbance or annoyance but also other acute and long-term physical and mental health impacts for local people.

The seriousness of air pollution or smell problem depends mainly on the distance between industrial estates and communities and the seasonal monsoon wind direction. The fifteen communities in the northern and the north-eastern of the industrial estates are suffered from the rainy season wind (the south-western wind) and summer wind (the south wind) eight months a year, while the communities in the western part of the estates are suffer from winter season wind (the north-eastern wind), four months a year (Figure 5). After the expansion of industrial area into previous buffer zone, some communities, which are located just next to the industrial estates on the north-eastern direction (Figure 6), are the most serious affected communities in terms of air pollution.

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[10] *Office of Environmental Policy and Planning, 1999.* The 1997 Environmental Quality Situation Report. *OEPP, Bangkok. (in Thai)*

[11] *Meesak Milintavisamai, 1997.* Air Quality in Mab Ta Put Industrial Estates. *Document for the seminar on "Lessons Learnt from Mab Ta Put", organized by*

***Figure 5**: Seasonal Wind Direction and Air Pollution Problem*

In the official record, the air pollution has been seriously above standard, sometime. In 1997, the situation was worst. Almost a thousand of students and teachers had to be moved to study in another school, some 10 kms. away from their school, for several months, causing the respiratory and sensational organ disorders and diseases and lower learning capabilities (Figure 7). Although the Industrial Estate Authority of Thailand tried to solve the problem by investing in both factories (improving pollution control) and school (air conditioners for the whole classrooms and offices), this air pollution incidence could not be satisfactorily resolved, leading to a permanently school relocation to the new place, which is three kilometers further from the original location [12]. However, although the complaints on

[12] Machima Wattakawong, 1999. Thailand Environmental Situation 1997-98.

Amarind Printing Co.,Ltd., Bangkok. (in T
smell and air pollution are still occurred sometimes, according to the communities' responses, the air pollution situation has been much improved now, especially compared to 1997.

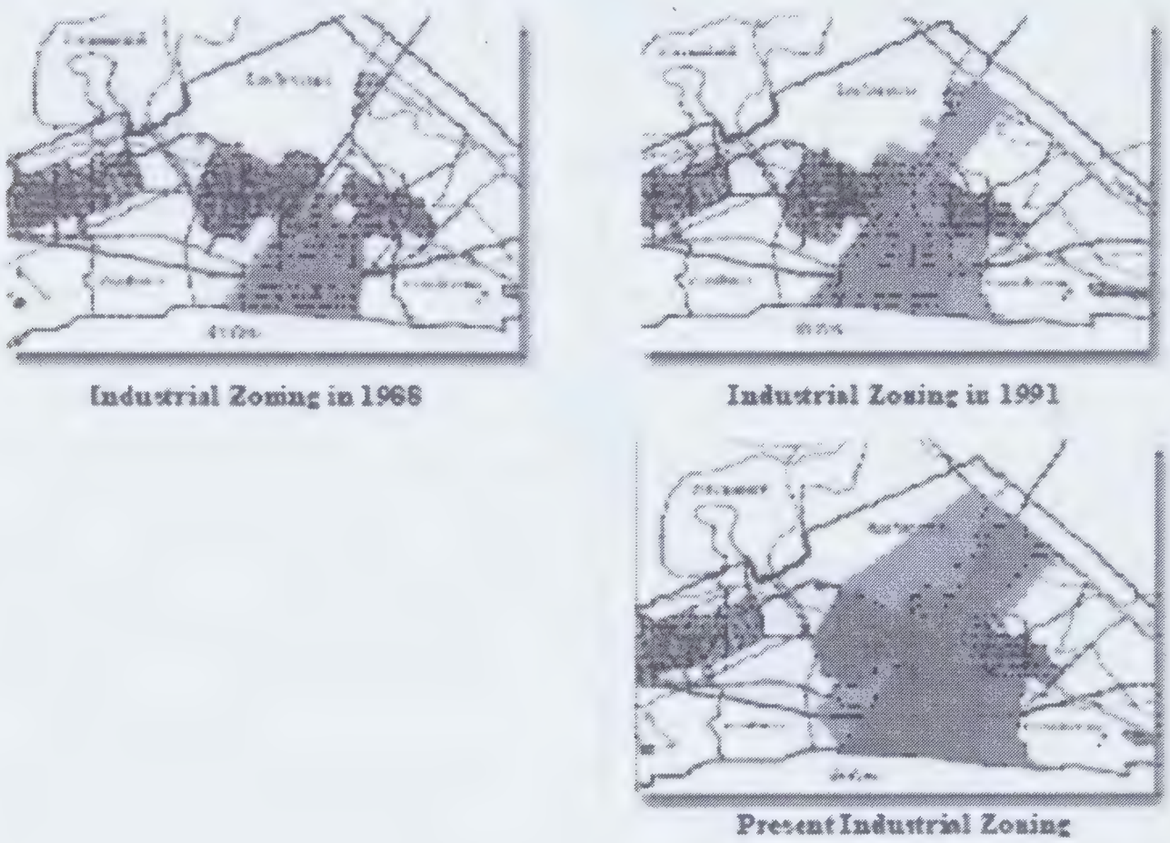

***Figure 6**: The Expansion of Industrial Area into the Previous Buffer and Existing Communities*

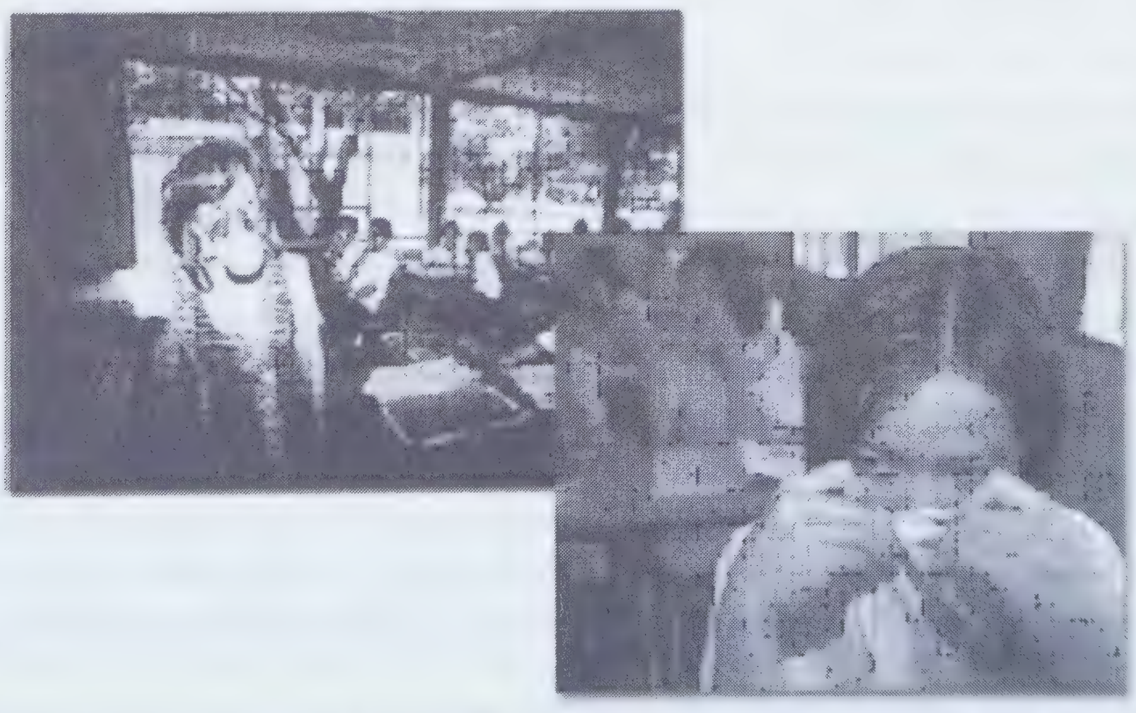

***Figure 7:** Air Pollution Problem in Local Secondary School in 1997*

Chemical Accident

Chemical accident is one of the most serious concerns for local people. There are many chemical accidents in each year, both in the chemical plants themselves and in the transportation process[13] . From 1996 to 2001, the number of chemical accident cases in this area is in the increasing trend[14] . In 2000 and 2001, almost half of chemical accidents occurring in Thailand, was found in Rayong and other provinces in the Eastern Seaboard. In some cases, people had to be evacuated from their residential areas for a period of time[15] . In 2000, about 700 persons were injured and 2 persons were dead by chemical accident. Therefore, many communities, around the estates and along the highways, are now suffered from the anxiety about chemical accident. It is also very important to note that the training and practicing of emergency plan have been completely lack, both in factory and, especially, in the communities.

Water Pollution

Concurrently, both fresh and sea water qualities have been significantly deteriorated. People in many communities cannot use their freshwater ponds due to the chemical contamination both from air and groundwater pollution. The rainwater in this area becomes oily and contains black sediment (Figure 8). The pH of rainwater becomes much lower, alarming the acid rain situation in this area[16] . The groundwater in many communities, the main sources of drinking water, becomes red (Figure 8) and contaminated by heavy metals. The report from Rayong public health office confirmed the contamination of Iron, Lead, Manganese, and Chloride over drinking water standard, in many groundwater sources. Official also recommended local people to avoid using these groundwater sources. There is no official explanation for this heavy metal contamination, while local people believe that illegal landfill hazardous waste dumping should be the main cause of the contamination.

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[13] *Machima Wattakawong, 1999. Already mentioned.*

[14] *Penchom Tang and Walaiporn Muksuwan, 2002. Already mentioned.*

[15] *Apinya Tanthaweewong (ed), 2001.* Loss by Poison: The Nine Case Studies in Higher Risk Society, *Campaign for Anti-Industrial Pollution Network, Bangkok. (in Thai)*

[16] *Pollution Control Department, not mentioned published year. Acid Rain. Pollution Control Department (in Thai).*

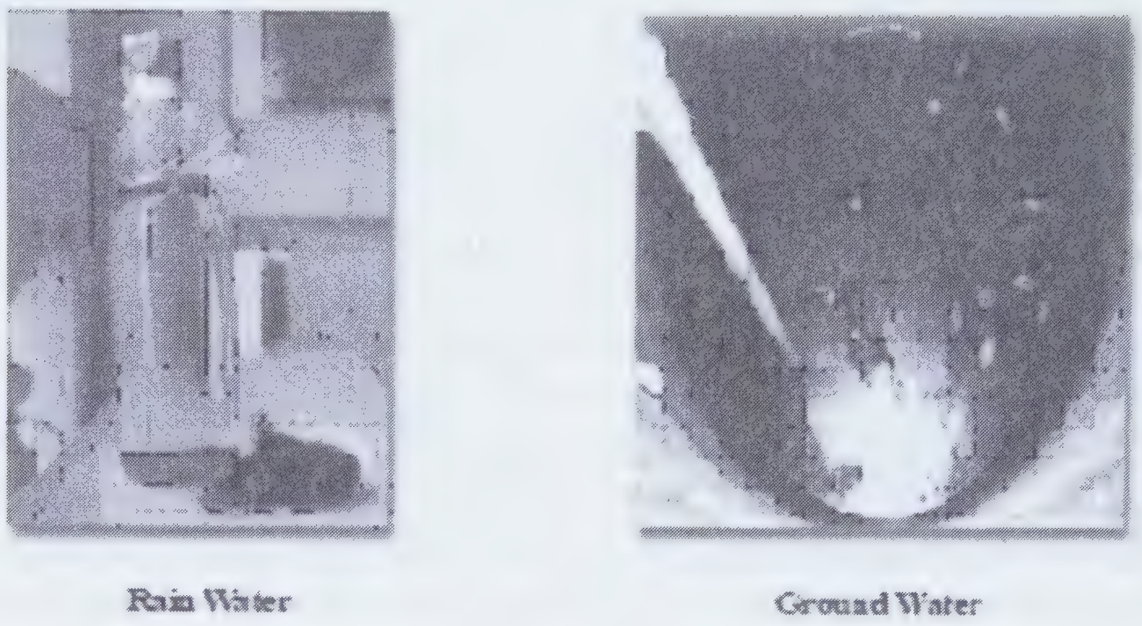

Figure 8: *Freshwater Pollution*

The freshwater pollution is very serious problem for local people, since only two and a half of communities access to public pipe-water. Therefore, above twenty-two communities have to pay much higher costs for buying drinking and using water from outside. For fruit farmers, they also complaint that the acid rainwater damages their fruit trees. However, the officials do not accept their complaints and their link to air pollution problem.

Moreover, from the PCD report, it is also evident that the industrial development caused heavy metal contamination in canals, marine water[17] and sediment[18] . Local people stress that illegal wastewater discharge from factories to canals and sea is the main pollution source. However, sea transportation accidents also cause serious marine water pollution, especially in terms of oil contamination. The concern of local people is that some heavy

[17] *Pollution Control Department, 1999. Final Report of the Project for Surveying and Information Collection on Pollution Sources and Recovery Plan for Water Quality in the Coastal Area along the Gulf of Thailand and Andaman Sea. PCD, Bangkok. (in Thai with English Executive Summary)*

[18] *PCD, 1999. Heavy Metals and Petroleum Hydrocarbons in the Industrial Area. PCD, Bangkok.*

metal contamination might also accumulate into and within, their marine fishery resources. From their own observations, especially by fishery communities, the quality of fishery resources is badly affected, in terms of smell, size, texture, and food poisoning. Some reports confirm that there is mercury contamination accumulated in marine food web[19] . However, Pollution Control Department does not confirm this conclusion.

Illegal Hazardous Waste Dumping

The illegal hazardous waste dumping, caused by ineffective environmental management systems, has been found in many places, including mixed dumping with domestic wastes[20] . In the past, the illegal hazardous waste dumping usually came to the communities by the free-service land reclamation for communities, leading to the contamination into soil, canal, and groundwater. After communities knew these negative impacts from hazardous waste dumping, the illegal waster dumping was moved to some unused land or remote orchards, and mixed with municipality waste. (Figure 9) Although the capacity of proper hazardous waste management is still quite limited, the communities mentioned that the problem from illegal hazardous waste dumping is much less serious now. Their explanation is that, possibly, illegal hazardous waste dumping is now moving to further areas, outside the area of this study.

Figure 9: *Illegal Hazardous Waste Dumping in Rayong*

[19] *Piyanatra Tumworn, 1997. The Biological Accumulation of Heavy Metals in the Inner Gulf of Thailand. Document for the seminar on "Lessons Learnt from Mab Ta Put", organized by Toxicologist Association of Thailand. (in Thai)*

[20] *The Regional Environmental Office (the Third Zone), 2000. The 1999 Environmental Quality Situation in the Eastern Region. OEPP, Bangkok.*

Seashore Erosion

The last serious bio-physical environmental problem is the seashore erosion. Presently, 30 kms. from total 100 kms. of Rayong province are heavily affected by seashore erosion. Some sand beaches and local roads are now already disappeared or almost disappeared. The seashore erosion has been occurred both by land reclamation (for industrial ports and coal-fired power plant) and by sand dredging (for industrial land reclamation) projects. The sand protection project was introduced, resulting in the deterioration of landscape (Figure 10). The disappearance of sand beach and the deterioration of landscape cause serious negative impacts on tourism, fishery and community recreation. Local people also believed that seashore erosion is also one of the main cause of higher rate in drowning along the Rayong seaside, due to the higher wave and deeper sea.

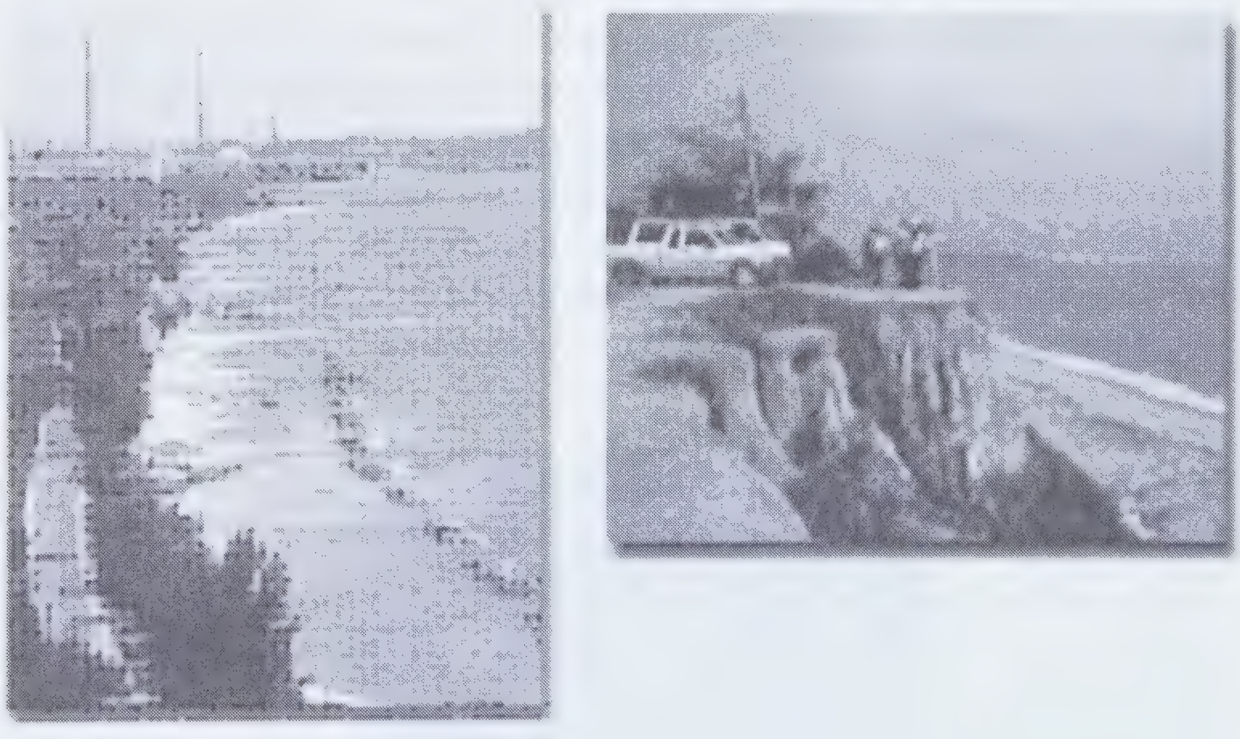

***Figure 10**: Seashore Erosion and Sand Beach Protection Project in Rayong*

Socio-economic Environmental Changes

Apart from bio-physical changes, industrial development in the area is also the driving force of socio-economic changes, which can be seen in three main aspects, as mentioned below.

Changes in Economic Structure

The buildings of industrial estates and infrastructures and their pollution have created the pressure on natural resource utilization and production bases of the local people, who basically relied on commercial agriculture, tourism, and fishery[21] . Some farm households sold their farmlands because of highly attractive land prices, but others sold their lands because they got incorrect information on land evacuation plans for industrial estate development and its infrastructure projects[22]. Some farmers mentioned that acidic rain water reduces their earning from horticulture. As mentioned earlier, tourist businesses have been heavily affected by seashore erosion, water quality degradation, and landscape deterioration. For fishery communities, it was also very difficult for those earning a living in fishing to maintain their occupation because of water pollution, coastal erosion[23] , and lower in quality of their fishery products.

The local people usually moved to non-farming activities. Some of them, especially the young and technically skilled persons, turned to be industrial labors. But mostly they provided services for migrant labors, like retailers or dormitory business in their communities[24] . Although, for those who can invest in new activities, these opportunities improved their economic situations, involvement in these economic opportunities also reduced their self-reliance capability and led them to depending heavily on

[21] *Kwansiri Chareonsup, 1998. The Impacts of Eastern Seaboard Development Program on the Quality of life of Nong Fab Community. Master Thesis Chulalongkorn University, Bangkok. (in Thai with English abstract)*

[22] *Surichai Wankaw et al, 2000. The Social Impacts of Eastern Seaboard Development Program on the Local Communities. Chulalongkorn University, Bangkok. (in Thai).*

[23] *Surichai Wankaw et al, 2000. Already mentioned.*

[24] *Kwansiri Chareonsup, 1998. Already mentioned. And Surichai Wankaw et al, 2000. Already mentioned.*

uncontrolled economic situations[25] . It should be noted that lower self-reliance capability can be seen also in terms of higher living expenditure, both by changing lifestyles and by environmental degradation, especially higher costs of water supply as mentioned above. Therefore, it is clear that, after Thailand's economic crisis in 1997 followed by a lower migration rate to this area, the economic situations in these communities have been heavily affected[26] .

Changes in Social Structure

Changes in social structure from the industrial estates can be seen in various levels. First of all, local people concern that the relationship within their family become looser, due to more individualistic ways of living. In their view, the working and education conditions limit their time for consulting and living together. For those who sold their land, extra income from land selling changed the lifestyle of many families, leading them to be exposed and affected groups, especially in cases of alcoholism, HIV/AIDS, and transportation accident. According to their hypothesis, the weakening of family relationship is one of the main factors of social problems, mushrooming in this area.

Another main factor leading to the rising of social problem is labour immigration. While a huge migration of labors into the community provides some economic opportunities for the local people, it also becomes the pressure on social and spiritual health of the local communities too. Many labour camps were built and, then, moved, creating various problems, both in terms of environmental and social health problems. Inappropriate camp building leads to sanitation problems and, possibly, the expansion of communicable diseases. Local people mention that, as a result of migration, the incidences of thievery, drug addiction, injury, and accident have been increased in their communities. According to local teachers, higher drop-out ratio from migration, affects student's ability for social adjustment, leading to lower learning capability and educational achievement of their students.

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[25] *Kwansiri Chareonsup, 1998. Already mentioned.*

[26] *Pao Boonyiam et al, 2000.* The Impacts of Industrial Factories on the Quality of Life of the Local People in Mab Chalood Community, Mab Ta Put Industrial Estate, Rayong Province. *Master Research Paper, National Institute for Development Administration. (in Thai)*

Spiritual aspect of their life has also been affected by changing social structure. Local practices and taboos were broken by more individualistic and new migrants' lifestyles. This tension is high in Muslim community, when introducing new lifestyle seems to contradict their traditional Islamic values and confuse Muslim young generation about their belief in what is the manner of the good life.

With the high proportion of immigrated and non-permanent community members[27] (from interviews, this proportion is as high as 60 percent in some communities), and differences in belief and lifestyles, social cohesion within the communities has been drastically diluted. There is no doubt, the capability of the local community-based organizations in dealing with their problems has been certainly weakened[28] .

Community Participation

From the case of air pollution problem, it is clear that, the degree of people's participation in the resolution process remains low and inadequate[29] . Mostly, they have tried to solve the problems individually by themselves, for example, by moving to other places, closing their windows, or covering their noses and mouths[30] . Only a handful of people made complaints to some related government organizations because they wanted to avoid a confrontation with government officials. According to literature reviews[31] and local interviews, there are many obstacles for the people to fully participate in the resolution process; i.e., (a) the expected **workload** put upon them, (b) **technical barriers** (jargons and processes) used by the government organizations during the discussion and negotiation process, (c)

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[27] *Wachrawat Sinthob, 1998. Public Attitude towards Hazardous Waste Management from the Industrial Estates; Case Studies of Communities around Mab Ta Put Industrial Estates. Master Thesis Kasetsart University. (in Thai with English abstract)*

[28] *Kwansiri Chareonsup, 1998. Already mentioned.*

[29] *Suntaree Taratikhun, 1999.* People Participation and Their Responses to Air Pollution Resolution Process in Mab Ta Put Municipality. *Master Thesis Thamasart University. (in Thai with English abstract)*

[30] *Malinee Wongsit et al, 1998.* Local Communities Attitude towards Environmental Management System of the Industrial Estate Authority of Thailand. *Institute for Population Studies, Chulalongkorn University, Bangkok. (in Thai).*

[31] *Suntaree Taratikhun, 1999. Already mentioned, and Malinee Wongsit et al, 1998. Already mentioned.*

loose social cohesion and ineffective communication system within communities, and (d) **mistrust** resulted from previous government practices (for example, the decision to move a public school instead of closing down the polluting factories). The degree of participation also depends on sex, income, education[32] , and the length of their stay in their communities[33].

Therefore, it can conclude that, the state of socio-economic factors and social supports in these local communities has been clearly degraded. This situation has had great impact on the local people whose livelihood has been in higher uncertainty, both in economic and social senses. Furthermore, the exposure to pollution problems, particularly the air pollution and chemical accidents has worsened this situation. This deteriorated situation can be recognized as a form of a social exposure to the mental, social, and spiritual health problems.

[32] *Palab Singhasenee et al, 2001.* Indicators of People Participation in Local Surveillance System and Rayong Toxicology Center. *Copied Document. (in Thai)*

[33] *Suntaree Taratikhun, 1999. Already mentioned.*

Analyzing Related Health Impacts

By all these negative trends in environmental and social quality, the local people are now at higher risks and of exposures from their entire human ecology, e.g. air, water, land, livelihoods, and socio-economic environment. However, there is no systematic (or comprehensive) information showing the actual characteristics of such risk and exposures, apart from air pollution, which the local people can easily check by its smell (Figure 11). This part will be divided into four main parts, applying different approaches and methods in analyzing related health impact, as followed.

Ecological Study

An ecological study also provides very interesting information. It shows undesirable trends in the health status. A comparison was made among the data from Rayong, regional and national levels. There are many instances where many groups of diseases which in the past, Rayong has lower outpatient ratio per 1000 population than (the average of) the region and the whole kingdom. But, now, Rayong's outpatient rates in these groups of diseases have become much higher than those in the region and the whole kingdom. All these groups of diseases are (a) respiratory system (Figure 12) (b) nervous system (c) reproductive system, (d) muscle system, (e) mental disorders, and (f) accident and injury. It is of great benefit to note that, some of these disease groups are highly related to the higher risks, illustrated by the above mentioned bio-physical and socio-economic changes and epidemiological studies, discussed later.

Changesin health determinants or risks	Seriousness of problem in community view point	Official information for health determinants changes	Official proven on health effects	Government plan for action	Tendency of problems and their health effects
1. Air pollution	very serious	clearly proven	proven for some acute health effects like respiratory system	co-ordination and action plan set up	alleviated but not eliminated
2. Chemical accident	very serious	clearly proven	proven only no of injured and dead people	lack of emergency plan training and practices	still the same
3.Water pollution	very serious	clearly proven	no systematic information	no effective plan	migth be worse off
4. Illegal waste dumping	serious	clearly proven by evidence	no information	no effective plan	alleviate and moved to other areas
5. Seashore erosion	very serious	cleary proven by evidence	no systematic information	ineffective coastal protection project	still the same
6. Changes in economic structure	serious for some community	no systematic information	no systematic information	no comprehensive plan	still the same of depends on economic situation
7.changes in social structure	serious and very serious for some community	no systematic information	no systematic information except higher out-patient rate in some relating disorder	no comprehensive plan	still the same or worse off
8.Community participation	serious	no systematic information	no systematic information	committee from three parties	better but still indequacy

Figure 11 : *The Situation and Tendency of Health Determinants and Impacts of Mab Ta Put Industrial Estate Development.*

A part from these groups of diseases, there are also other groups of diseases that should be concerned too. These groups of diseases include (a) communicable disease (b) blood system (c) digestive system and (d) malignancies. Although, in the past, Rayong's outpatient rate in these groups of diseases were already higher than those of the region and the whole kingdom, the differences become much wider now.

From the in-depth interviews and focus group discussions, these undesirable trends were found to have a possible link to labor migration (for communicable diseases), poor sanitation and low environmental quality (for diseases in digestive system), chemical accidents (for diseases in respiratory and nervous systems), and industrial pollution (for malignancy, respiratory and nervous system). However, by using only ecological study with outpatient information, the causal relationship between the industrial development and these health impacts is still too far from being conclusive.

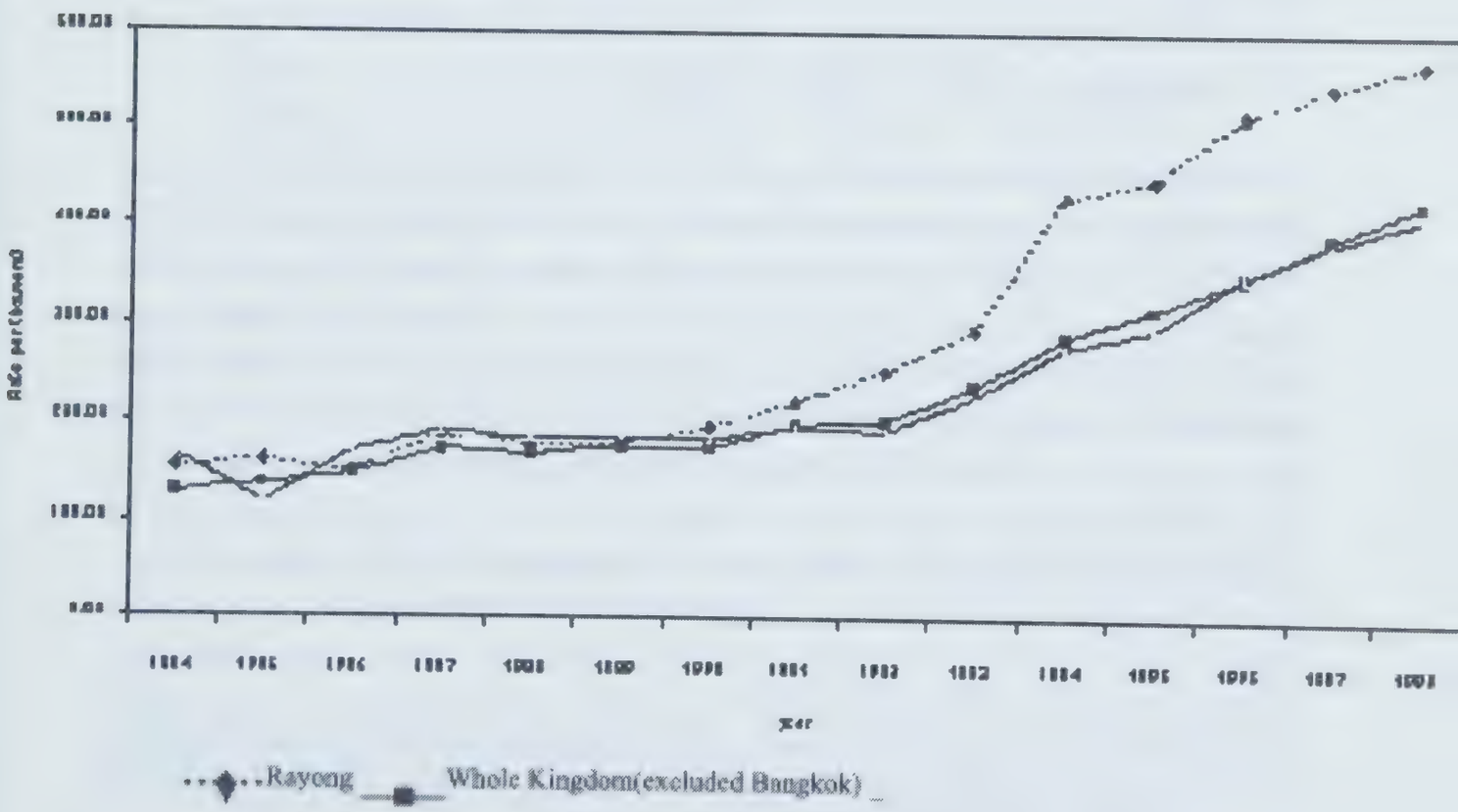

Figure 12: *Out-Patient Ratio from Respirtory System Diseases, 1984-1998*

Source: *Ministry of Public Health*

Epidemiological Studies

To gain more insight information, epidemiological studies should be reviewed. As a result of the limited information on risks and exposures, only the health effects from air pollution can be directly tested by epidemiological studies. The three studies during the years 1997 to 2000 show the association between the exposure to air pollution and acute health impacts, especially in respiratory and central nervous systems. For example, Anchalee[34] and associates found that, in 1997, the local people were exposed to Benzene and their relative risk between the exposed and control groups in respiratory and central nervous system disorders was twice as much. Wibool and associates[35] also confirmed that, in 1998, the local people were exposed to Styrene and Xylene and the exposed group suffer more severely from the disorders in respiratory, eyes, and central nervous systems than the control group. Lastly, Pitpusana[36] confirmed that, in 2000, the exposed groups of students and adults were still facing with higher risks in respiratory and central nervous system disorders.

Long-term Health Physical Impacts

Apart from acute health impacts, like respiratory system diseases and disorders, local people also have worried about long-term physical health impacts. Local people observed that their relatives have been more often passed away by modern diseases, like cancers, leukemia. As mentioned earlier, the ecological study also show that Rayong have an increasing trend for out-patient ratio from tumors including cancer. This trend had still increased from 1998 to 2000. Moreover, the pattern of cancer in Rayong is still different from other parts of Thailand, since it found higher rate in Leukemia. However, National Cancer Institute makes a clear caution that

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[34] *Anchalee Siripitayakhunkij et al, 1998.* Health Impacts from Smell Pollution Exposure in the Vicinities of Mab Ta Put Industrial Estates. *Ministry of Public Health, Bangkok. (in Thai)*

[35] *Wiboon Siribudhistada, 2001.* The Study of Health Impacts on Local People around Mab Ta Put Industrial Estates. *Copied Document.*

[36] *Pipusana Saichon. 2001.* The Study and Analysis of Environmental Impacts on the Health of Local People in Tambol Mab Ta Put. *Document for Seminar on "Searching for Local Surveillance System to Protect Health Impacts from Chemical Pollution. Medical Science Institute, Chulalongkorn University, Bangkok. (in Thai)*

the trend is just rough observation. National Cancer Institute has conducted deliberative studies to indicate the incidence of cancer in Rayong compared to another province and to search for biomarkers for carcinogenic risks in the groups of employees, local communities, and control groups. The results of blood tests and the outcomes of the study have not yet released to the local communities and public, causing public nervous on possible long-term health impacts from industrial pollution.

Mental, Social, and Spiritual Health

From literature reviews[37] and interviews, it is found that, the four dimensions of mental stress and social tension have been emerged and increased as described below;

(1) **the pressures** have been increased by their tense working conditions, unstable economic situations, environmental degradation, and the dilution of social cohesion
(2) **the anxiety** has been emerged from uncertain social and economic future, and uncontrolled pollution exposure, accident, and emerging social problems around and within communities.
(3) **the frustration** has been arisen from uncontrolled environmental and social situations, ineffective community participation and uncurbed solutions, leading to mistrust, hopeless, and conflict situations.
(4) **the conflicts** have been emerged within the communities due to the different values and between communities and industrial estates due to the environmental degradation problems.

In terms of official statistics, Rayong's rate of out-patient per population in mental disorders has significantly increased, from slightly lower than the regional and national average in the past to almost three times higher than the regional and national average at present. It is very interesting that the situation has become more serious after the economic crisis in 1997 (Figure 13), which may also be linked to economic uncertainty.

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[37] *Kwansiri Chareonsup, 1998. Already mentioned, and Pao Boonyiam et al, 2000. Already mentioned.*

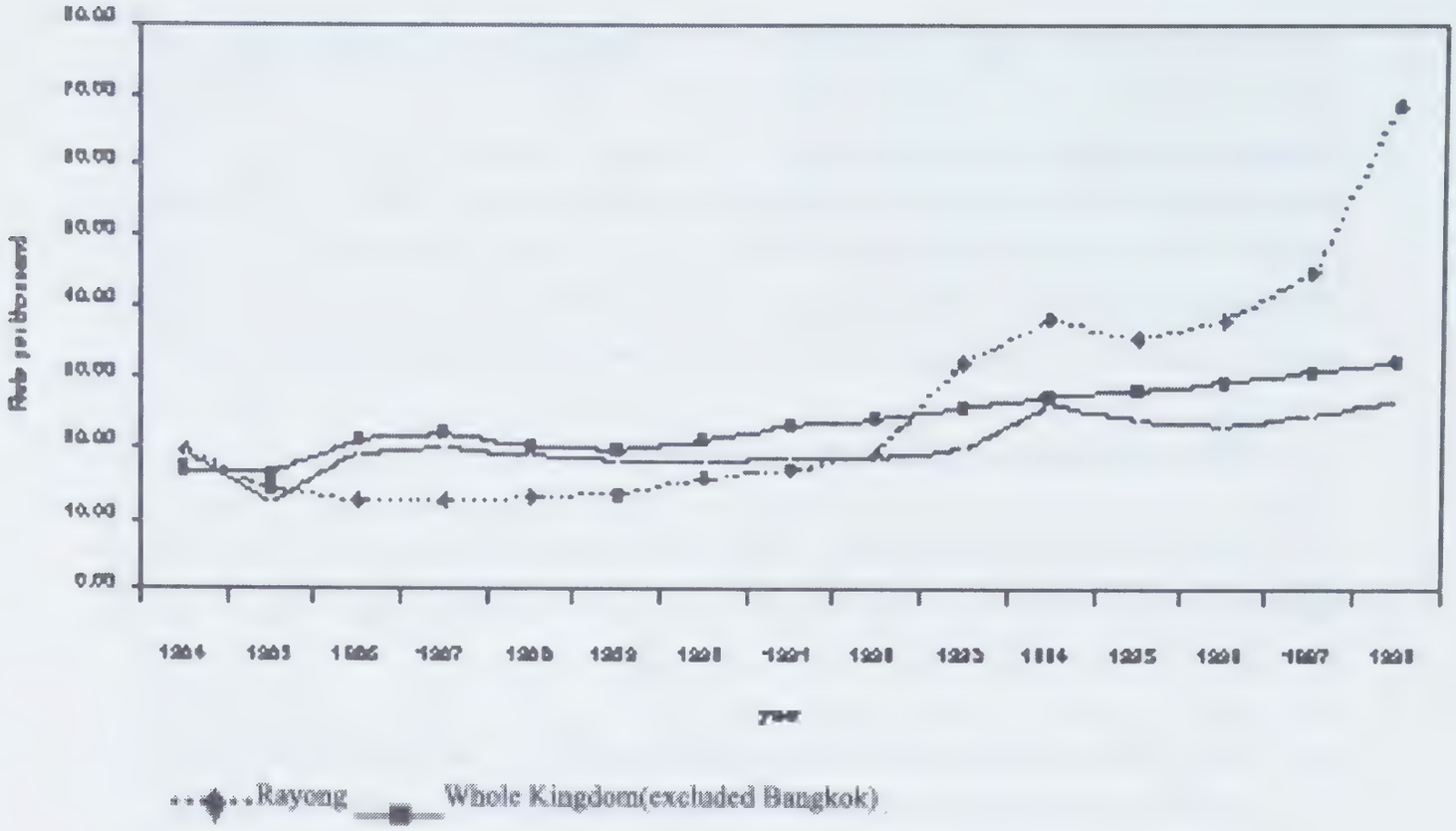

Figure 13: *Out-Patient Ratio from Mental Disorders, 1984-1998*

Source: *Ministry of Public Health*

Apart from the mental health impacts, social health has also been highly affected. Rayong's rate of out-patient per population in accidents, injuries, and suicide has been moving in the same direction with the ratio in mental disorders. Presently, Rayong Province ranks third in the high infectious disease rate of HIV/AIDS and top in the rate of suicides by poison[38] among 76 provinces in the country. All these undesirable trends provide enough rationale for the timely action by responsible agencies to assess the direct and indirect health impacts from industrial development on the areas of mental, social, and spiritual health of the local people and communities.

[38] *Ministry of Public Health, 2001. Annual Epidemiological Surveillance Report, 1999. Ministry of Public Health, Bangkok.*

Analyzing Public Policy Process

From all evidence and concerns gathered and collected from literatures and field studies illustrated above, the framework of environment and health impacts assessment for this case study was drawn up based on the WHO's DPSEEA model, as shown in Figure 14. This framework was presented to generate public discussions both in Rayong Province and Bangkok as well as at the demonstration when the National Health Assembly convened. Although this model can systematically link many scientific and practical evidence together, WHO's DPSEEA model fails to answer why it has been occurred and persist. Therefore, in this case, an analysis of public policy processes is highly required both for understanding the situation and for finding effective ways in changing policy processes.

In terms of public policy analysis, these health impacts from Mab Ta Put industrial estate developments clearly show the imbalance and ineffective in public policy process for industrialization in this country. It is imbalance in the sense of aspects of or interests in regional development. It is quite clear from this case that the environment, social, and health interests received far less concern by policy makers, compared to economic achievement, resulting higher health risks and impacts. It is also imbalance in terms of power especially between policy makers, large investors, and local communities. The imbalance power can be seen both in terms of negotiation and decision-making (or power against) and capabilities (or power to).

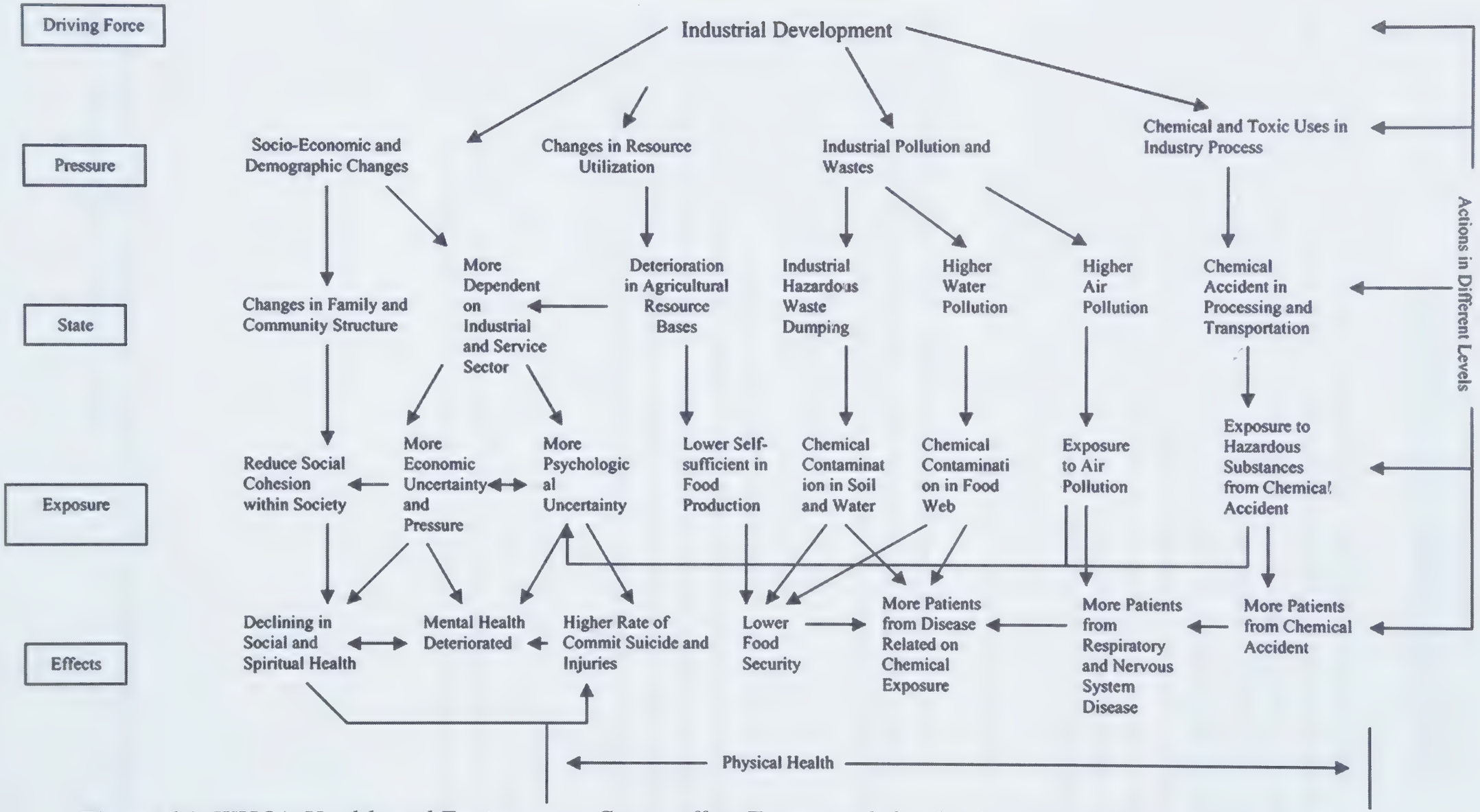
Driving Force
Pressure
State
Exposure
Effects
Industrial Development
Socio-Economic and Demographic Changes
Changes in Resource Utilization
Industrial Pollution and Wastes
Chemical and Toxic Uses in Industry Process
Actions in Different Levels
Changes in Family and Community Structure
More Dependent on Industrial and Service Sector
Deterioration in Agricultural Resource Bases
Industrial Hazardous Waste Dumping
Higher Water Pollution
Higher Air Pollution
Chemical Accident in Processing and Transportation
Reduce Social Cohesion within Society
More Economic Uncertainty and Pressure
More Psychologic al Uncertainty
Lower Self-sufficient in Food Production
Chemical Contaminat ion in Soil and Water
Chemical Contaminati on in Food Web
Exposure to Air Pollution
Exposure to Hazardous Substances from Chemical Accident
Declining in Social and Spiritual Health
Mental Health Deteriorated
Higher Rate of Commit Suicide and Injuries
Lower Food Security
More Patients from Disease Related on Chemical Exposure
More Patients from Respiratory and Nervous System Disease
More Patients from Chemical Accident
Physical Health

Figure 14: *WHO's Health and Environment Cause-effect Framework for the Case Study of Eastern Seaboard Development Program.*

Due to its imbalance of power and interests, public policy process to protect and promote health of local people is also ineffective, since the protection mechanism, like the design and allocation of buffer zone, could easily be broken down by more attractive economic rationality. The incomplete information system in environmental, social, and health aspects make health aspects become less effective in public policy process. It is also ineffective, in the sense of tackling ongoing problems, for example, moving local school in stead of closing down the plants, leading to mistrust situation not only in Rayong province but also spilling allover Thailand.

Policy Recommendation

Although these already mentioned health effects might be caused by various factors which lead to the difficulty in making conclusive assumption as to their specific cause-effect relationship, these evidences should be fairly enough to confirm that the local people are now faced with greater health impacts, from industrial development. Furthermore, other health impacts, apart from these acute effects, are not now systematically collected, compiled, tested or reported to the public. Thus, it is clear that the local people's health is now at risk and an urgent and comprehensive plan of actions is needed.

By applying WHO's model, the recommendations are systematically developed into the same five steps, as followed.

In terms of **effects**, the actions should be taken to provide enough medical and public health services, related to higher risks and impacts from industrial works and pollution within the area. More effective surveillance and information systems on various types of health risks and impacts should be intermediately developed. Local people also ask for the health compensation fund to cover their health losses and protect their health, in the past, present, and future.

In terms of **exposures**, the lack of clean water supply needs to be tackled immediately. The better environmental surveillance systems with community empowerment program need to be developed. The emergency plans for various types of chemical accidents need to be reviewed, trained, and practiced with high degree of community consultation and participation.

For the **state** level, communities' capacity strengthening is highly required to alleviate both environmental and social problems in the communities. More specifically, communities need to take some actions in mobilizing social capital within communities. They also need to participate more effectively in improving environmental standard inside and around their communities. Apart from community action, the development of more systematic and wider environmental and social monitoring program is provincial and regional levels is highly recommended.

In terms of **pressure**, it is clearly from this case study that the expansion of industrial estates in the second phase of Eastern Seaboard Development Program needs to be controlled by deliberative land zoning and its effective enforcement to limit environmental and social pressures on local communities. The selection of clean technologies and appropriate industries should be other policy options for reducing the pressures. The development of comprehensive and interactive environmental and social planning should also be developed to recover the health status of local people and communities, and to ensure that environmental and social pressures will be timely controlled and limited.

However, with high mistrust in governmental responsibilities, local people tend to ask for the changes in **driving force**, by limiting the expansion of industrial development in the area and by promoting the growth and development in agricultural and tourist sectors in stead of ongoing industrialization. Unfortunately, their popular policy proposal is still far from being concerned by the government, unless more systematic and clearer health and other impacts, as well as the alternative development paths would be presented to the society and policy arena.

Therefore, this HIA study is just a starting point for the whole process of advocating healthy public policy in this region. As mentioned earlier, more systematic and clearer health impact analysis needs to be continuously developed and interactively communicated with society and policy arena. More importantly, the imbalance in power and capabilities between different policy stakeholders and ineffective policy mechanism should be reduced, through the deliberative capacity strengthening for local communities and other potential policy partners, like local governments and NGOs. Certainly, this process will be incrementally developed and, thus, take time. Unfortunately, local people are still face with day-to-day risks and impacts. Thus, together with the advocating for overall actions for healthy public

policy, any specific actions need to be immediately taken (or influenced) in every step, as mentioned earlier, whenever policy windows are opened.

Integrated Impact Assessment of Managing Pak Mun Hydropower Dam:

The Future of the Mun River and the Health of Its People

Mr. Decharut Sukkumnoed

Miss. Sodsai Srangsok

Mr. Suphakij Nuntavorakarn

Pak Mun hydropower dam has been a controversial issue in Thai politics for longer than a decade. The dam, completed in 1994, was built on the Mun River, only 5.5 kms. before reaching the Mae Kong River (see the detail of project in Box 1). It inevitably obstructs the natural fish migration from the Mae Kong to the Mun River. Therefore, the fishery resource has certainly been degraded, leading to sharply reduction of income for local fishery households. The local protest against the dam had been continued to recover their natural resources and own ways of living for almost a decade (see the historical background of the project in Box 2).

In 2001, after the long negotiation, the local people succeeded in pressuring the new Thai government (Dr. Thaksin Cabinet) to open the dam's gates for a year, in order to recover the river and their ways of living. The health impact assessment (HIA) has been set up to provide the evidence-based information to advocate for healthy public policy in managing the dam, with the support of other relating studies. This paper aims to present the recent experiences of HIA and other impact assessment studies and their lessons learnt in providing evidence-based recommendations for sound and equitable public decision-making.

The paper will be divided into four main parts. First, the background of HIA and other impact assessment will be reviewed.

Second, the results of the HIA will be presented, with the comparison with other relevant studies. Then, the process of informing and influencing policy makers will be presented. Last, the lesson learnt from this case will be concluded and provide some recommendations for other cases.

Box 1: Project Description

Pak Mun Hydropower Dam is the first run-of-the river dam in Thailand. The dam is located on the Mun River, 5.5 kms. before reaching the Mae Kong River, in Ubon Ratchathanee Province. It is the concrete dam with 17 m. high and the length of 255 m. The dam storage is 108 MSL. The total install capacity is 136 MW, with the energy production about 280 GWh per year. Apart from electricity generation, the dam also aims to support local irrigation system and fishery.

The main problem of the dam operation is the obstruction of the natural fish migration (from the Mae Kong River to the Mun River and, then, back to the Mae Kong River). Although the fish ladder had been built, it is too narrow and steep for big economic fishes to be passed, leading to sharp reduction in fish diversity and local fishery income. Other problems are (a) the loss of natural rapids and their ecosystem, (b) the loss of common land and local plants along the Mun river, and (c) the degrading of water quality due to slow riverflow. The dam has also been criticized for its over-claimed benefits, including (a) its low dependable capacity (less than 40 MW), (b) no irrigation system improvement, (c) unsuccessful fish breeding program, and (d) its increasing investment costs (from 3.9 to 6.6 billion THB).

Box 2: Historical Background

Year	Events
1967	National Energy Agency conducted the study on "Lower Mun River Development Project" with the collaboration with French Government.
1970	The preliminary survey conclude that the dam should locate on Kaeng Tana rapid (4 kms. before reaching the Mae Kong river) with the height of 112 MSL.
1980	The owner of project was changed from National Energy Agency to Electric Generation Authority of Thailand (EGAT).
1982	EGAT contracted Team Consulting Engineering Co.,Ltd. to conduct the Initial Environment Effects Study and found that number of household which have to be migrated could be as high as 4,000 families.
1988	EGAT decide to change the project site to 1.5 km upstream above the previous location site and reduce the height of storage to 108 MSL and the number of migrated households reduced to 250 families.
1990	Thai government (Gen. Chartchai cabinet) approved the project implementation plan with the total investment of 3.88 billion THB
1994	The local fishermen organized the big demonstration for the loss of fishery income during the dam construction period.
1994	Pak Mun Hydropower Dam was completed and commissioning into the National Power Grid System, with the total costs of 6.6 billion THB.
1995	Thai government (Mr. Banharn Cabinet) agreed to compensate for the loss of fishery income during the dam construction period, with the amount of 90,000 THB for each household. The number of affected household who got the compensation was 3,084 households.
1997	The local fishermen, as the Assembly of the Poor (ACP), organized the big protest in Bangkok asking for the compensation for the permanent occupation loss due to the ineffectiveness of the fish ladder. Thai government (Gen. Chavalit Cabinet) agreed to provide the financial fund for buying 15 rais of farmland for each household.
1998	Thai government (Mr. Chuan Cabinet) changed their previous resolution and stopped financial fund for changing occupation.

Year	Events
1999	The World Commission on Dam selected the Pak Mun Hydropower Dam as the case study. The report was presented in the 2000 showing that the dam was not economically reasonable and the environmental and social impacts were not appropriately mitigated.
2000	AOP organized the big and long-term protest asking for the Thai government to opening the gate for natural fish migration. Thai government (Mr. Chuen Cabinet) decided to open the gate for 4 months. However, in practice, the gate was opened only for 2 months
2001	After the long protest and negotiation, Thai government (Dr. Thaksin Cabinet) decided to the open the dam gate for 4 months and expand to 1 years in order to conduct the study on "Approach to Restoration of Ecosystem, Livelihood, and Culture "
2002	The main study with also other relevant studies was presented to Thai government. The main study suggested opening the dam gates for 5 years. However, based on public opinion poll, Thai government (Dr. Thaksin Cabinet) decided to open the dam gate for 4 month annually.

1. HIA and Integrated Impact Assessment

The cabinet resolution, in May 2001, to open the dam gates provided good basis and opportunity for Thai society to learn and develop evidence-based information for supporting public decision-making in conflicting issues. Since the dam was built without any proper EIA study, Thai society aims to use this opportunity to learn how to manage the dam with lower negative environmental and social impacts.

Ubon Ratchathanee University (URU) was formally assigned by Thai government to conduct the study on "Approach to Restoration of Ecosystem, Livelihood, and Culture in the Lower Mun River" for one-year period. Concurrently, local fishermen, with the support of Thai NGOs, also organized their own research, called "Villager Research", focusing on the effects

on fishery resources, fishing tools, knowledge, economy, and local cultures, which they firmly believe no one could know better than them. EGAT, as the project owner, also supported Thailand Science and Technology Institute (TSTI) to conduct socio-economics survey and local attitudes in managing the dam.

Each study has its own focuses and some relating issues (as shown in Table 1). Unfortunately, health aspect was not the main concerns of these three studies. Therefore, Health Systems Research Institute (HSRI) decided to support local NGOs to conduct the study focusing on health impacts in the participatory and qualitative approach, to get along with other studies.

List of studies	Organizer	Issues of Concern					
		Fish.	Ecology	Social	Econ.	Health	Energy
1. Approach to Restoration of Ecosystem, Livelihood, and Culture	URU with the assignment of Thai government	✪	✓	✪	✪		✪
2. Villager Research	Local Fishermen with the support of NGOs	✪	✪	✪	✓		
3. Socio-economics survey and local attitudes in managing the dam	TSTI with the supports of EGAT	✓		✪	✓		
4. HIA of Pak Mun dam and Opening dam gates	Local NGOs with the supports of HSRI	✓	✓	✓	✓	✪	

Table 1: *Impact Assessment Studies of Opening Pak Mun Dam's Gates and Dam Management Options*

Note : ✪ *indicate the main focus of the studies and*
✓ *indicate the relevant issues of the studies*

It is very important to note that, in the case of Pak Mun Hydropower dam, health aspect is far from being center of conflicting argument. In this case the big debate is always on the impacts on fishery resource, income, and compensation. However, all debating issues are also highly linked to the health of local population. To avoid too narrow scope of HIA of the dam project, as usually focus on schistosomiasis, the local definition of health and their determinants of health should be firstly identified. Its results can be found in Box3.

Box 3: The Definition of Health in Community Viewpoint

According to villagers' point of view, health is "**living happily and peacefully together with the family and community, and within the natural environment, which can be ensured their secure livelihoods and community culture**". The villagers also determine 6 factors for **healthy living**, as follow;

- **Having enough food.** One villager said that, for her, food security means, "when I am going to sleep, I do not worry what will be the food for my children tomorrow". They also mention that "enough food" do not only mean enough food for their family, but also food for sharing and donation.
- **Secure livelihood.** Secure livelihood means they do not worry about health expenditure, when they get sick, and educational expenditure for their children. They also wish to own their farmland, livestock, and some saving money, according to their own potentials.
- **Happy Family.** For them, happy family means all three generations, grandparents, parents, and children, are living together within the family and learning from their parents how to secure their livelihoods, including maintaining supportive relationship with their relatives.
- **Healthy Body.** Healthy body means they can exercise and continue their jobs and activities. It also means they can live without severe diseases and syndromes, travel without moving sickness and listen to regular long Buddhist preaches without painful beriberi.
- **Peaceful spirituality.** They hope that their mind should be free from the anxiety of food insecurity, sickness, poverty, and conflicts. They should also join every Buddhist ceremonies together at their community temples.
- **Generous Community.** Generous community means they can live and share with their neighbors. Within the community, they can develop their community and organize regular donation and activities together, with the strong and shared spirit.

According to their definition of health and their own ways of living, they define **four main determinants of health**, as mentioned below;

1. **Natural Resource Security** includes (a) the fertile arable land, (b) naturally flowed river, (c) fertile forest (d) natural rapids, (e) diversified fishes, and (f) herbs and local vegetable.

2. **Food Security** concerns with (a) diversified food sources (b) food safety, and (c) food availability.

3. **Economic Security** concerns with (a) income, (b) expenditure, (c) saving, and (d) debt.

4. **Social Environment** includes (a) togetherness, (b) supportive relationship, (c) shared activities, and (d) shared regular donation and ceremony.

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2. The Results of HIA and Other Impact Assessments

After the definition and determinants of health were locally defined, the changes in four areas of health determinants resulting from opening the dam gates would be analyzed. The data collection and analysis was done on the basis of participatory approach. In the next step, the results from analyzing the changes in health determinants will be used to analyze overall health impact of opening the dam gates and suggesting for new management scheme of Pak Mun Hydropower dam.

2.1 The Changes in Natural Resource Security

Managing the river certainly affected the natural resource security. As a result of the dam construction, fish diversity and availability are severely affected due to the ineffective design of fish ladder. The land and local plants along the riverbank were disappeared after the dam operation. The natural rapids were also under the water.

The situation was significantly improved after opening the dam gates, especially in terms of fishery resources, the river and the rapids. For land and forestry resources, the recovery probably needs more time, partly because of the invasion of alien species, like giant mimosa. Local resource utilization was certainly improved, providing more security to people to live in their homeland. (See also Table 2)

Resource	Effects of Dam Construction	Effects of Opening Dam Gates
Land	Loss of land along the river, used for dry season plantation and animal raising.	Land along the river returned. Only some parts can be used for farming, others are already invaded by giant mimosa.
River	Lower quality, causing rash on the skin and people cannot use for consumption.	Improving and closer to natural situation before dam construction, but people still do not use for drinking
Forestry	Forests along the riverbank were disappeared. Forests in islands were not disturbed, but people cannot access.	People can access to forests in the islands, but forests along the riverbank were already invaded by giant mimosa.
Rapids	Rapids were under the water and became the place for sedimentation, where fishes cannot longer live there.	Slow improving some sediment was flush by the river. People returned to rapid for recreation and ceremony
Fishery	Fish diversity and availability were sharply reduced. Fish hail was expanded. Almost 100 fish species could not be found in the river during dam operation.	Fish migration came back, though still lower than previous situation before dam construction. Fish diversity and availability obviously increased.
Plants and Herbs	Plants and herbs along the riverbank were disappeared. The uses of local and herbs were significantly reduced.	Only small plants and herbs returned. Many of them can be used for food and traditional medicine.

Table 2: *The Changes in Natural Resource Security after Opening the Dam Gates*

Source: *Srangsok et al, 2002.*

The results of HIA study were confirmed by other impact assessment studies. The villager research mentioned that 152 fish species was found, compared to 96 species during the dam operation. From all species, there are 134 species migrating from the Mae Kong River throughout the year. About 500 local plants species was found, with 50 species live on the rapids. The URU study also found that there are 184 species of fish in the Mun River after opening the dam and fish migration are happened all year round, according to different natural conditions.

2.2 The Changes in Food Security

Because of recovery of natural resources, previously the main local food sources, after opening the dam gates, the local situation on food security, including diversity, safety, and availability, was significantly improved (see also Table 3). One obvious indication is the number of different dishes on the table. The URU study also found that 79 percent of local households indicate the improvement in food safety and 77 percent indicate the improvement in food availability. Unfortunately, there were no scientific tests of improving food security and its health impacts in all studies.

Item	Effects of Dam Construction	Effects of Opening Dam Gates
Food diversity	Most of food sources were severely affected. Local people depended much more on food from the markets.	Many food sources returned, but still far from previous situation before dam construction. Local people already adopted market food as one of main food sources.
Food safety	Lower quality and higher risks of chemical poisoning from market food.	Improving, more natural and organically-grown food.
Food availability	Mainly depended on economic situations and cash liquidity of each family.	More self-reliance on food production, including fish and local vegetable.

Table 3: *The Changes in Food Security after Opening the Dam's Gates*

Source: *Srangsok et al, 2002.*

2.3 The Changes in Economic Security

As mentioned earlier, the obstruction of natural fish migration, leading to sharp reduction in fishery income and economic security of local people. The economic situation was much improved after opening the dam gates, but still far from the situation before the dam construction (see Table 1). After the dam construction, due to the sharp reduction in fishery and farm income, local people had to depend on insecure non-farm income. Opening the dam gates can significantly increase fishery income, though, non-farm job is still the most important source of income.

The food and other expenditures, which steeply increased after the dam construction due to the loss of food sources and cultural changes, still increased slightly. The balance between income and expenditure, therefore, became much better after opening the dam gate. On the Contrary, the debt was still increased in alarming rate, which may confirm the long-term effects of dam on production and cultural changes. Probably, one of the most important economic indicators is the reduction in poverty incidence, after opening the dam.

Item	THB/Year		
	1990	2000	2001
1. Cash Fishery Income	25,742	3,645	10,025
2. Cash Income	12,518	7,720	6,223
3. Non-farm Income	20,099	36,905	36,957
4. Total Cash Income	**58,359**	**47,670**	**53,205**
5. Fishery Expenditure	3,564	2,551	3,732
6. Food Expenditure	8,267	16,034	15,587
7. Other Expenditure	18,826	34,870	36,114
8. Total Expenditure	**30,657**	**53,455**	**55,433**
9. Debt	4,926	18,972	29,074
10. Number of household living under the poverty line (%)	**32.7**	**62.5**	**57.6**

Table 4: *Some Selected Economic Indicators of Local Households (at current price)*

Source: *Sukkumnoed, URU study, 2002*

However, it is very important to note that the improving in economic situation was not occurred in equal rate. The improvement was very much linked to the fishing capacity of each household. The household, which can invest in fishing business, can earn much money than others. Finding from URU study shows that some households, who did not have enough capital and labor to invest in fishing business, still got struck in high poverty incidence (see Table 5), especially for those who also have no farmland.

Household group	Number of Sample	Poverty Incidence (%)		
		1990	2000	2001
No commercial fishing since 1990	199	52.76	60.80	57.29
No commercial fishing in 2001	277	29.24	64.26	67.15
Commercial Fishing in 2001	423	25.53	62.17	51.54
Without boat and engine	95	31.58	66.32	67.37
With boat but no engine	225	28.00	63.56	52.00
With boat and engine	103	13.59	55.34	33.98
Total Household	899	32.70	62.51	57.62

Table 5: *The Changes in Poverty Incidence of Different Household Groups*

Source: *Sukkumnoed, URU study, 2002*

2.4 The Changes in Social Environment

According to local people, social environment is very important for their health status. The sense of togetherness, supportive relationship, shared activities, and regular donation and ceremonies are locally highlighted. After the dam construction, the social environment for local people was severely deteriorated in three main ways. First, due to economic hardship, emigration was rapidly increased, affecting togetherness and all other aspects of social environment. Second, the conflicts, as a result of opposite standing points in the dam operation and compensation in the villages, certainly weakened supportive relationship and regular shared activities. Last, the loss of rapids and the changes of river, as the holy places, caused some obstacles in prolonging their shared activities and local ceremonies.

Opening the dam gates can restore some, but not all, aspects of social environment. The rapids and the rivers can be physically returned to be local social and spiritual infrastructure, which means some shared activities and ceremonies can be revitalized. Some members decided to move back to the communities to become fishermen again, but others still reluctant to leave their non-farm jobs. According to local people, it was enough to reclaim the sense of togetherness. However, the conflicts were still going on. Although, in the local fishing grounds, the two opposite groups can work together, in the public discussion and decision, they are always in opposite sides. This provides an important lesson learnt that, in some circumstances, social environment is even hardly to be restored than the physical one. Therefore, it should not be destroyed by any development projects.

Item	Effects of Dam Construction	Effects of Opening Dam Gates
Togetherness	Severely affected, higher emigration and family separation due to economic hardship.	Much better for fishery household, more time living together and teaching their children to prolong their culture.
Supportive relationship	Highly affected due to the conflicts between two groups.	The conflicts still the same, except joining and sharing the same fishing grounds.
Shared activities	Lower shared activities due to emigration, conflicts, and the loss of rapids, as the holy place.	Revised some activities, related to the river and the rapids, like "*sao luang mong*" to clean up their rapids and fishing ground.
Donation and Ceremony	The donation was reduced due to economic hardship and emigration. The ceremonies held on the rapids and the river had to change to other places.	The donation is improving due to better economic situation. Some ceremonies, like "*Boon Nao*" returned to the rapids.

Table 6: *The Changes in Social Environment after Opening the Dam Gates*

2.5 Overall Health Impacts

After the changes in all determinants of health had been analyzed, overall health impacts can be assessed. The assessment, here, is followed the local definitions of health (already presented in Box3). The results from Table 7 show that various health situations had been improved after opening the dam gates, especially in terms of having enough *food, happy family, and peaceful spirituality*. However, the limited investment opportunities and local conflicts caused slower rate of improvement in the aspects of secure livelihood, generous community, respectively. Possibly, it is still need more time for observing notable improvement in *healthy body* (especially when food security is separated into another health category).

HSRI also asked local NGOs to reorganized Table 7 into Table 8, in order to present overall health impacts in four dimensions of health, as stated in the National Health Systems Reform. It is also clear that, the health of local people in all dimensions were improving, especially in mental health aspect. In general, it can be concluded that opening the dam gates provides significantly positive health impacts for local people.

Definition of Health	Overall Impacts	Observation
Having Enough Food	☺☺	Almost all households became more easily access to variety of natural food, therefore, less pressure for their survival.
Secure Livelihood	☺	Almost all households had higher income, but still much lower than previous situation and the benefit also depend on household's economic status and investment capacity in fishing business.
Happy Family	☺☺	The sense of togetherness and companionship was significantly improved. Learning activities between generations were highly appreciated.
Healthy Body	☺	No big differences presenting in one year, except better food intake, reduction in rash and skin, and lower tension for their survival.
Peaceful Spirituality	☺☺	Spiritual infrastructure and activities were revitalized. Survival hardship is reduced, leading to improving conducive environment, though, the conflict still remained.
Generous Community	☺	Shared activities, donation, and ceremonies were gradually recovered, but the conflict still blocked the process of strengthening supportive relationship.

Table 7: *Overall Health Impacts from Opening the Dam Gates, according to Local Definition of Health*

Note:

= *No improvement compared to situation during the dam operation*

= *Improving but still far from previous situation (before dam construction)*

= *Improving and closer to previous situation (before dam construction)*

= *Improving to the previous situation (before dam construction)*

2.6 The Effects on Energy Sector

URU is the only study focusing also on the effects on energy sector. The study shows that, Pak Mun hydro-powerplant provides very small contribution to overall power system (40MW dependable capacity compared to total 22,000 MW dependable capacity). Moreover, because of high reserve margin in Thai power sector (more than 40 percent reserve margin) and nation-wide grid connection system, leaving Pak Mun hydro-powerplant has no effects on the national power system reliability.

However, opening the dam gates means that EGAT has to pay around 300 million THB more for fuel cost used in other powerplants (including buying from Lao PDR.). It can cause the increasing in electricity tariff for 0.003 THB/kWh, compared to average tariff of 2.22 THB/kWh. It can also create some technical problems, since Ubon Ratchathanee province is located on the end of national grid. The investment in other connection grids and rearranging buying contracting with Lao PDR are recommended, if Pak Mun Hydropower dam would be long-term leaving. After all, URU conclude that, technically, Pak Mun hydro powerplant can be leave at least for five years, until the high reserve margin situation would be changed. Combined with the results from impact assessment, URU suggested the government to continue open the dam gates for five years.

Health Aspect	Effects of Dam Construction	Effects of Opening Dam Gates
Physical Health	Food insecurity, due to the loss of local food sources	Much better due to improvement in fishery and other resources.
	Rash in the skin, from lower water quality	Much better because of better water quality.
	Disorders from high tension	Better but still anxiety about long-term government decisions.
	Accidents due to broader river	Lower risks but still having some incidence
Mental Health	Pressure, due to economic hardship and insecurities	Much better due to better economic situation and food security
	Anxiety, due to various insecurities	Better but still anxiety about long-term government decisions.
	Conflicts, based on different standing points on dam issue.	Still but start joining and sharing the same fishing grounds.
	Oppression, due to negative response from government.	Still but feel more confident in asking for their own rights.
Social Health	Loss of togetherness due to the emigration and hardship	Much better especially for fishery households.
	Weaker supportive relationship due to conflict on dam issue.	Still but start joining and sharing the same fishing grounds.
	Broader social networks to support their movement.	Still the same

Health Aspect	Effects of Dam Construction	Effects of Opening Dam Gates
Spiritual Health	Losses of spiritual infrastructure, esp. those are related to the river and rapids.	The holy places and ceremonies gradually returned.
	Loss of shared activities, esp. those are related to fishing.	The shared activities gradually return, but remaining conflict obstructed their progress.
	Deterioration of conducive environment due to hardship and conflict	The hardship was reduced. More donation and spiritual practices were expected, but the remaining conflict may affect the progress.

Table 8: *Health Impacts of Dam Construction and Opening Dam Gates, According to Four Dimension of Health*

3. Influencing Public Decision: Attempts and Results

Although the three impact assessment studies, except TSTI study, recommended Thai government to continue opening the dam gate as the main way to restore the ecosystem, livelihood, health, and local culture, Thai government decided to open the dam gate only for a period of four months a year. The government decision was surprisingly based on the three-day opinion poll from people in three districts in Ubon Ratchathanee province, who are mostly not affected group. The opinion poll indicated no differences in their preference between opening the dam gate for four months a year and longer periods and Thai government used this point as the decisive evidence for this long-term conflicting issue.

This unusual decision-making process has raised the questions in two different ways. On one hand, the questions on "good governance, knowledge-based society, and evidence-based decision-making" were posed to the government. On another hand, the question on "the impacts of impact assessment" was posed to academic society. In fact, it will be valuable benefits for Thai society trying to answer both lines of question. However, due to the limited of time, the second question was picked up to discuss in this session, in order to improve our practices in impact assessment studies.

To analyze the impacts of impact assessment, the concept of "The Triangle that Move the Mountain", introduced by the Thai senior citizen Dr. Prawes Wasee, will be applied. This concept recognized the synergy of three main components; namely knowledge management, civic empowerment, and political involvement, in advocating public policy and decision-making (Phoolcharoen, 2001). The hypothesis will set up in the ways that unsuccessful influencing government decision in this case may occur because incomplete integration between these three components.

In the case of Pak Mun dam, the process of impact assessment studies, was well successful in terms of civic empowerment, since it allowed civic groups, both local NGOs and people, to participate and learn directly in impact assessment process. In the case of villager research, which received excellent recognition in both academic and civil societies, shows the

improvement in knowledge management at the local level. However, knowledge management in impact assessment in this country still needs much further improvement, especially in terms of organizing one integrated impact assessment, in stead of having various-focused impact assessment studies, and political involvement in evidence-based decision making.

The connection of knowledge management and political involvement was the real weak point of the impact assessment process in this case. Table 9 presents the recent attempts and activities in influencing public decision. It can be observed that, apart from making decision in opening the dam gates in May 2001, there was no meaningful political involvement before all impact assessment studies was almost reached the conclusion. Normally, involving in the later stage allows politicians to use various tactics in avoiding evidence-based decision-making.

The main political tactics used in this case were "confusion and dilution". The confusion firstly occurred in September 2002, when government made misinterpretation in URU recommendation by quoting that "URU suggested the government to open the dam gates for only four months a year". This leaded to the big debate, for almost the two months, on what was the actual recommendation of URU study, until the complete URU study, including the actual recommendation, was finally publicly presented in October 2002.

Then, the dilution tactics were applied. In December 2002, government decided to organize public debate in the house of the Prime minister. One day before the debate started, Ministry of Energy and EGAT presented other three studies to Thai public, suggesting in different directions. These three studies were never publicly mentioned and scrutinized before. The dilution tactics assists Thai government to escape from all evidence-based recommendation by creating the image of technically disagreeable solution, and, thus, requiring for ultimate political solution. The opinion poll was used to show that the government standing points were on the favor of the majority group.

Timing	Attempts and Activities
May 2001	Pak Mun Dam gates were opened for four months, according to government resolution.
June 2001	URU study and Villager Research were started.
August 2001	Scoping of URU study was presented to EGAT and AOP in Ubon Ratchathanee.
September 2001	Government decided to expand the dam gates' opening for one year to ensure the complete results of URU study.
October 2001	HSRI study was started
May 2002	URU, village Research, HSRI, and TSTI studies were together publicly presented the progress report together in Bangkok.
June 2002	Villager Research was publicly presented.
July 2002	HSRI study organized public review in Ubon Ratchathanee
August 2002	HSRI study organized public review and press release in Bangkok.
August 2002	URU present preliminary results to the government, and the government decided to open the dam gates only for four months a year.
October 2002 November 2002	The final report of URU study was publicly presented, confirming the suggestion of five-year opening the dam gate. Various public seminar and media program on this issue.
November 2002	Villager Research got "The nation's most social profitable research" Award from National Health Foundation.
December 2002	Government organized public discussion in the house of Prime Minister.
December 2002	Ministry of Energy and EGAT presented other three studies on this issue, one day before public discussion.
December 2002	The Prime Minister assigned National Statistics Office to conduct three-day opinion poll, without public inform.
January 2003	Government confirmed the resolution to open the dam gates only for four months a year, based on the result of the opinion poll.

Table 9: *Recent Attempts and Activities in Influencing Public Decision-Making in Case of Managing Pak Mun Hydropower Dam.*

Source: *by authors*

On another way, the success in implementing these "confusion and dilution" tactics also means civic power to reconcile and advocate public decision-making still rather weak. This stress that civic empowerment in using evidence-based information in public debate is still highly required. The civic empowerment in this sense is not cover only related NGOs and people organizations, but also some important social institutions, like mass media, and, possibly, general Thai public.

In short, the ineffectiveness in influencing public decision occurred, because the combination of three components in "the triangle that move the mountain" is still far from being complete. Knowledge management in impact assessment process may increase public participation at the local level, but cannot adequately empower the civic movement and persuade public decision-making in the national level. The ability of civil society to assimilate and triangulate findings from different impact studies needs to be improved. Most importantly, political involvement and commitment needs to be strengthen in the process of impact assessment and public decision-making.

4. Conclusion and Recommendation

The recent experience from the case of managing Pak Mun dam confirms that the integrated impact assessment studies provide very good basis for understanding the intertwined relationship between health and various determining factors. The results of the HIA, therefore, become more holistic, leading to the confirmation of positive health impact of opening dam gates. The knowledge management in this case can also bring the impact assessment down to earth, by allowing local people and organizations to join and even conduct important pieces of impact assessment study. However, since the political involvement in the process was not inadequately and properly designed, the impact assessment studies failed to convince policy-makers to follow their suggestions without any other convincing counter-arguments. The future of the Mun River and the health of its people are still insecure.

The lessons learnt from this case suggest that, the integration of civic empowerment and political involvement into impact assessment process needs to be developed in this country. The knowledge management in impact assessment process should try to avoid the redundant and confusion from the different studies. Concurrently, knowledge management has to educate and empower civil society to reconcile and assimilate different information and findings, occurred in the process of impact assessment and influencing public decision-making. By combining all these three element of the triangle that move the mountain, hopefully, more convincing process and evidence-based information should be developed to ensure that, finally, the health of local people will be well-protected.

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Health Impact Assessment of Contract Farming in Thailand: A Scoping Process

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Abstract

The majority of Thai people work in agricultural sectors. They are economically and socially vulnerable to several drawbacks. The Thai Government introduces a number of policies to resolve their problems. One of them is the promotion of Contract Farming. Private sectors are encouraged to make contracts with farmers to obtain sufficient quantity and quality of supplies for production in agricultural industry.

Objectives:

1) To define the scope of health impact assessment of contract farming policy.
2) To provide a venue for stakeholders' participation in the health impact assessment

Methods: The assessor used varieties of methods to identify the scopes of the health impact assessment. The processes were consisting of two meetings with stakeholders, in-depth interviews with farmers and seed companies' personnel as well as government officials, direct observation at

the farms and literature reviews. The definition of health used in the study was based on bio-psycho-social model.

Results: The Thai government has been promoting Contract Farming practice since the 6th National Economic and Social Development Plan in 1987. Farmers will produce agricultural materials for agricultural industry companies and receive payment for the products if they comply with the standards defined in the contracts. Tomato seeds, chili seeds, tobacco leaves, vegetable seeds and chicken raising are examples of the agricultural products that are commonly defined in the contracts.

It has been shown that stakeholders were concerned about health impact of the contract farming practice in terms of physical health, mental health, social health, spiritual health, social and environmental impacts.

Literature reviews found that farmers and farm employees were affected by the heavy use of pesticides. Neurological illnesses were the most common problems. The stakeholders proposed that assessment of impacts on illnesses of endocrine system, reproductive system and cancers were needed.

The participants mentioned that advantages of contract farming were opportunities to have higher incomes and job creation in communities during dry seasons.

Conclusion The scoping process with stakeholder involvement of health impact assessment proved feasible and beneficial.

Health Impact Assessment of Contract Farming in Thailand: A Scoping Process

Introduction

Agricultural sectors contributed to around 50 per cent of Thai Gross Domestic product (GDP) in the past 40 years. The contributions have been declined rapidly to 20 per cent in 1984, 17 per cent in 1987, 14 per cent in 1989 and only 10 per cent in 1997. Whereas, the contributions from other economic sectors such as industrial sectors, service and trade sectors have been expanding far more than the agricultural sectors[1] .

Sixty five per cent (about 40 millions) of Thai citizens work in agricultural sectors. They have been facing chronic economic hardships. There are limitations of land areas used for agriculture to increase productivity. Prices of agricultural products always fluctuate. Most farms heavily rely upon rainwater. Droughts happen frequently.

Environmental capitals are in the process of rapid degradation. Costs of agricultural production are rising. Competitions from abroad are becoming major threats[2].

Policies and measures have been proposed to alleviate the problems such as the promotion of sustainable agricultural practices, the diversification of products, the increased productivity by sciences and technology, the promotion of agricultural industry and the promotion of contract farming practices[3-4].

It is still unknown whether the recommended policies and measures will eventually benefit farmers and society at large. On the other hand, concerns on negative health and environmental impacts are raised because the contract farming introduces more pesticide uses and there are questions about adequacy of incomes that companies give farmers[5].

The policy to promote contract-farming practice was identified for

the needs for health impact assessment (HIA). Therefore, measures to mitigate negative impacts and recommendations to enhance positive ones can be properly proposed.

Capacity to conduct health impact assessment in Thailand is in infancy phase. The study is one of the HIA pilot projects supported by Health Systems Research Institute aiming at capacity building in health impact assessment. The study will provide the team with direct learning experiences of the HIA processes.

Objectives

The aims of the study are as follows:

1. To define the scopes of health impact assessment of contract-farming policy.
2. To provide a venue for stakeholders' participation in the health impact assessment.
3. To gain experiences in conducting health impact assessment.

Processes and Methods

The Health Impact Assessment Board of the Health Systems Research Institute had earlier conducted the screening process.

The Board endorsed that the next steps of Health Impact Assessment (HIA) of contract farming policy should be continued and a team of assessors was invited to organize the health impact assessment processes.

This study will focus mainly on the scoping process of HIA of the contract farming policy. It was a retrospective study.

Contract farming for tomato seeds production in Khon Kaen province, in the northeastern part of Thailand, was chosen as a case study for health impact assessment.

The definition of health used in the study was based on bio-psycho-social model.

The assessors applied varieties of methods to identify the scopes of health impact assessment as follows:

1. *Literature reviews* were conducted by the assessors to learn from past experiences about the impact of contract farming policy and the details of written policies related to contract farming.

2. *In-depth interviews with farmers* were conducted to learn about their views on the possible impacts of contract farming practice, the contracts they made with companies and the production processes.

3. *In-depth interviews with seed companies'* personnel were performed to learn about details of the contracts, company's policies on the relationships with farmers, profits and expenses management.

4. I*n-depth interviews* with government officials were implemented to learn about the government policies related to contract farming, measures and work plans of the Ministry of Agriculture designed to support the contract farming.

5. *Direct observations at farms* were implemented to learn about the actual practice of farmers in producing agricultural products defined in the contracts and potential social and environmental impacts.

6. *Two seminars with stakeholders* were held to present preliminary scoping results and to listen to the opinions of the stakeholders.

Results

Description: Government policy on contract farming:

The policy aiming to promote contract farming was firstly announced in the 6th Five-Year-National Economic and Social Development Plan in 1987 and has presently been continued in the 7th - 9th Plans. The plans described the intention of the government to increase economic growth in

agricultural sectors by promoting agricultural industry for exports. Agricultural industry companies are encouraged to make contracts with farmers to secure adequate quantity and quality of raw agricultural products. Contract farming is expected to be one of the main measures promoted to achieve the above goals4.

Contract Farming Practice is a managerial process invented to rearrange the relationships between producers and purchasers of agricultural products. Private agricultural industry companies make contracts with farmers to produce agricultural raw materials for agricultural industry. Specifications and prices of the products will be defined in the contracts. Farmers are usually required to comply with the rules and regulations of the production processes determined by the companies[6-7].

If the farmers violate the specifications in the contract, the companies will refuse to buy the agricultural products. The companies will provide baby plants, fertilizers, pesticides and extension services to the farmers. The farmers will pay for these services by deducting from their incomes when they sell agricultural products.

The agricultural products usually promoted in the contract farming are tomato seeds, chili seed, vegetable seeds, watermelon seeds, potato, tobacco leaves, chicken etc.

Advantages of contract farming

Contract farming practice has some advantages for farmers, for example:

1) price guarantee
2) secured customers of farm products
3) access to new production technology for farming

Disadvantages of contract farming

Contract farming practice has some disadvantages for farmers, for example:

1) limitation of abilities to comply with specified production processes
2) new production skills acquired from contract farming practice might

not be applicable to different farm practices
3) unfair contract specifications, such as no health insurance covered
4) use of dangerous production materials or processes, for example, pesticides

A case study of tomato seeds production

In Khon Kaen province, there are more than 10 seed export companies who make contract farming with farmers in communities surrounding Khon Kaen City. Tomato seeds production is one of the agricultural products commonly found in the contracts. The production usually begins in September to October after the end of harvest season in paddy fields.

Figure 1: *A Farmer is Spraying*

Figure 2: Farmer's Glove Used in Field

Each farmer family, on average, prepares 4-16 square-meter plot of lands to grow tomato plants. 2-3 family members are involved in the production. Farmers are required to strictly comply with the steps specified by the seed export companies. Farmers must seek for and destroy unwanted tomato plant species that might be contaminated in the fields. Specified techniques of pollination and integration must also strictly be applied.

The growing processes involve the use of several pesticides and other chemical substances. For instance, Carbofuran, Cyhalothin 1,

Monochrotophose (this has been banned by the Ministry of Agriculture, but is still available in market)9, Mancocide, Ditanem 41, Fundazone, and Methyl Cyfluthrin.

The seed export companies organize the farmers into 7-10 members groups. The leaders of the groups will be responsible for distributing raw materials and information from the companies. Some are also hired to provide extension services to members.

Farmers usually practice inadequate body protection from the chemical exposure. Some quit seed production because they could not tolerate the exposure. Some choose to hire young villagers to do difficult parts of the seed production i.e. pollination integration, spraying of pesticides.

Figure 3: *Farmer's Dressing in Pollination Process*

A study in 1991 found that farmers who participated in contract farming for tomato seeds production suffered a number of illnesses, for example, mouth dryness, palpitation, nausea and vomiting, leg numbness, muscle spasm, abdominal muscle cramp, dizziness, chest discomfort, anorexia etc.

Figure 4: *Farmer is in the Field*

Figure 5: *Farmer's Dressing in Spraying Process*

The study also revealed that 43.08 per cent of the farmers had a reduction of functions of Cholinesterase (a neurotransmitter at neuromuscular junctions). They earned on average 15,000 Baht ($US 333) per family for the 3 months period. Some were unfortunate because the tomato plants they were growing might not produce seeds at all. In such cases, the seed export companies will usually give them 2,000 - 3,000 Baht ($US 44 - 66) as a compensation for such income lose and the payment of raw materials for seeds production (fertilizers, pesticides, baby plants etc) will be given up. These compensations are not written in the contract. The companies see them as a generosity for unfortunate farmers. In addition, there are no health

insurance coverage or health service benefits for the farmers included in the contracts.

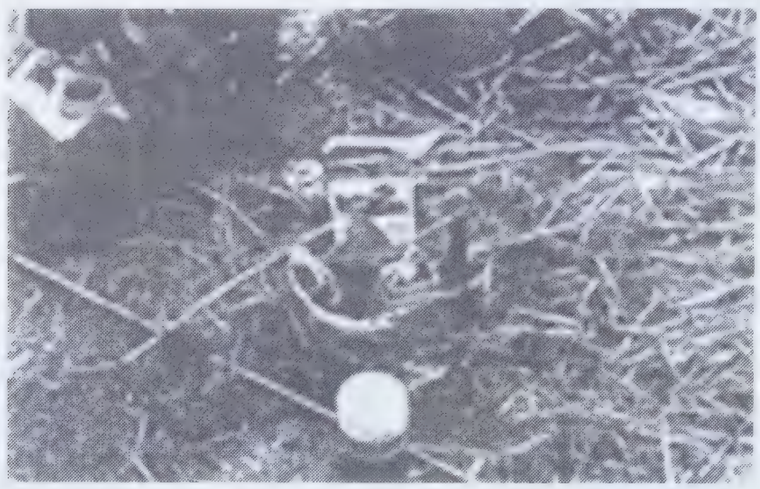

Figure 6 : *Spraying Equipment*

Figure 7: *Pesticides and Herbicides*

Scopes of impacts to be assessed

For this study, contract farming of seed production is the target for the assessment of health impact on farmers and villagers. The stakeholders who participated in the scoping processes have proposed that the following issues should be included in the health impact assessment.

Spatial and time issues

Two sub-districts of Khon Kaen province where contract farming for seed production is implemented were chosen. A retrospective assessment of the health impact was identified.

Physical health

The following potential physical health impacts were identified for the assessment i.e. Physical fitness, neurological illnesses, visual acuity, generalized malaise, fatigue, salivary secretion, abortion, infertility, hematological malignancy, neurological malignancy, death, disability, neurological development of children.

Mental health

The following potential mental health impacts were identified for the assessment i.e. emotional stress, work-related stress, anxiety related to the fear that the yields of the seed production might be low.

Social health

The following potential social health impacts were identified for the assessment i.e. Relationships among family members, relationships among community members.

Spiritual health

The following potential spiritual health impacts were identified for the assessment i.e. Feeling of self-reliance, sense of life-fulfillment.

Social impact

The following potential social impacts were identified for the assessment i.e. strengths of community organization, conflicts in community, crime rate, availability of chemical substances for suicidal attempt, drug abuse rates, informal educational activities in community, relationship with outside organization.

Economic impact

The following potential economic impacts were identified for the assessment i.e. Income per person per month, debt rates, cost of production, sources of investment, expenditures of farmers, employment rate, choices of employment.

Environmental impact

The following potential environmental impacts were identified for the assessment i.e. Quantities of bees, fish, birds, frogs, snakes, contamination of pesticides in surface water and underground water, air quality, waste from pesticide equipment.

Methods and processes of impact assessment for the above scopes

Participants have identified that both qualitative and quantitative method should be used to assess the scope of impacts identified. Stakeholders should be involved in the assessment processes. Students should also be encouraged to participate in the assessment processes.

Discussions and Conclusions

Contract farming policy brings numbers of potential impacts, particularly on one that uses a lot of pesticides, on the health of farmers and villagers. Potential positive impacts are short-term financial benefits, choices of employment during dry season. Potential negative impacts are on physical health especially impacts on neurological illnesses, illnesses of endocrine systems, illnesses of reproductive systems.

Stakeholders have identified scopes for health impact assessment including impacts on physical health, mental health, social health, spiritual health, social impact, economic impact, environmental impact.

Qualitative and quantitative methods of data collections with stakeholders'

involvement are identified for the assessment.

It has been shown that early involvement of stakeholders in the scoping processes of health impact assessment is feasible and beneficial to all involved and it is more likely that the results of health impact assessment will be used.

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Community-Based Actions on Assessing Water Pollution and Health Impact

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Abstract

Recent countrywide water-quality assessment reports (2000-2002), classified most Thai rivers falling into moderate to poor qualities. Industrial effluents and extensive farming run-off were often claimed to be major sources of those water pollution impacts. The Thai Government (Department of Pollution Control), with its limited resources, could do best by conducting a snapshot survey twice a year of every river, aimed at analyzing country-wide situation and showing any early warning sign for public use.

This paper attempted to explore the role of community-based actions on water pollution assessment in two Thai outstanding sub-watershed cases, the Nam Phong-NP of the northeast and the Nakorn Nayok-NN at the central part. These NP&NN communities have long been under stress as aquatic biota for their diet continue to decline, and the river waters became inappropriate for daily uses. Further, health impacts, such as skin rashes and spiritual health, were also found very common among those risk groups living nearby the polluted rivers.

The NP&NN community leaders and volunteers have been trained to identify the impact sources, water-quality monitoring techniques and health impact quantification. The communities organized their team to conduct water assessment activities across the sub-watersheds. Stakeholder meet-

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ings were then organized thereafter while using the community-based assessment information as the key input. The water pollution corrective measures thus eventually could be achieved, while those stakeholders shared their future plan and activities to be implemented in that locality. The local governments were also acting as the center-point organization to include and support that community-based action, while later found that water quality became much improved. Those communities agreed to continue their water assessment as to safeguard their water environment, livelihood well-being and health impact.

Key words: Capacity Building, Community-based Assessment Action, Health Impact

Background:

Most Thai water channels were regulated by dams and weirs, and that the water authorities were fully controlling the river flow which aimed at providing sufficient waters for domestic, industry and farmland uses. The industrial discharges and agricultural run-off were claimed to be the two major sources that caused those waters-logged downgrading. The locals particularly those who lived nearby the much polluted channels have got health and living-condition impacts, this often occurred during dry season as when the water level became lower.

Recent water-quality assessment reported by Pollution Control Department PCD (2002) classified most of the Thai rivers falling into moderate to poor qualities. The Thai government by the PCD could do best by conducting a snapshot survey twice a year, while more detailed spatial and temporal changes on water quality could not be made. Once when the locals complained about immediate pollution occurred, the local government authority with its limited capacity could often do only by discharging reservoir waters to dilute those pollutants.

This paper attempted to explore whether the local communities could be capable of playing a key role in assessing their surface waters. The study also aimed to test the two platforms; environmental assessment-EA and health impact assessment-HIA, whether these two could merge any significant contribution to the water pollution resolution and further given rise to better environmental management planning. The EA was introduced,

started in 1998, to the Nam Phong-NP sub-watershed located at the middle high plateau northeast, this was the site where the water pollution often occurred and widely recognized throughout the country. The HIA was applied to the Nakorn Nayok-NN, a small sub-watershed located at the lower central region, while health impact from the polluted water was well acknowledged. The 6-NN Tambols (sub-districts) was designed to perform the HIA exercise, which began in 2002.

The study applied the "community participation" as the key input, while the locals were encouraged to play an active role in every step along the thread. The two projects' activities were roughly planned beforehand, while more details and adjustments were expected to fulfill by the local participants. This paper reviewed what have been found when applying the "capacity building" on water pollution related issues to the local Thai communities.

The Study Sites:

Nam Phong-NP

The NP located in Khon Kaen Province northeast Thailand (97 msl.), approximately 400 km. from Bangkok, the NP community faced a long experience of water pollution impact, starting from 1997. The local NP lived on mixed rice, tropioca and sugar-cane growing, the waters both used for domestic and farmland drained from the Phong River (a tributary of the Mekong). The Phong flowed across the northeast and finally joined the Mekong downstream northeast region. The Ubolratana, the biggest northeast dams, located upstream to the NP, it was built to store the Phong waters for Khon Kaen Province for multiple uses-industry, rice farms and city consumption.

Many large industries were also located below the Ubolratana, in amidst to the farmlands, where their effluents were discharged into the Phong River. Fish kills and skin rashes were very common, waters drained from the Phong River to the farmlands thus having both high organic and inorganic content. The village bored-wells were inappropriate for household use with high salinity and chemical leaching. The NP water pollution

continue to develop and reached the peak, particular on 5th December 1997 there were about haft a million fish kills along the Phong River and during the same month the local hospital reported a high incidence of skin diseases ever recorded with 2291 cases outbreak (NPH 1998, DOH 1998, also available on-line: www.anamai.moph.go.th/factsheet). In early 1998, the provincial government so far tried best by setting up an environmental abatement and protection plan for the Phong sub-watershed, which aimed to boost various government sectors to take a cooperative curative pro-action. However, with various roles and functions as well as different expectations between responsible Departments, which sometimes often found repeated, the Phong pollution still remained largely unresolved. The NP sub-watershed eventually became the hardship puzzle for the government while the local communities lose hope, and that was generally recognized as the worse pollution case of the country.

The Nam Phong

- **Water reserve**: 1-Mega dam-the Ubolratana of mixed uses (2000 million cu.m).
- **Water abstraction &waste Discharge**: Large industry/rural&urban community/agriculture; pulp &paper, power plant, sugar and tropioca mill, whisky &bottling, city & small town daily consumption, rice farms irrigation, fish-*Tilapia* caged culture.

The Nakorn Nayok

- **Water reserve**: 1-Small dam of mixed uses (8 million cu.m).
- **Water abstraction &waste discharge**: Small industry/rural community/agriculture; chemical refinery plant, municipal wastes, poultry organic residues, rural water-supply, water logging for farmland irrigation.

Nakorn Nayok-NN

The NN sub-watershed located in the lower Thailand central part (25 msl.), all the NN River network were fully regulated by many irrigation gates interconnected. Unlike the NP with rather widen and long channel, the NN was rather small narrow and flat while its water received mixed discharges from small-scale chemical industry, city effluents, landfills and large poultry farms. The NN waters became allergic to skins when contacted, particularly at Bannao and Prommanee communities, which located downstream to those pollution sources. These two communities had relatively high dermal diseases incidence rates which were 51.08 and 29.53 cases per hundred respectively, while the others located upstream nearby ranged 1.93-2.94 cases per hundred (BHC-2002). The high-risk groups to that skin diseases were females and children.

Study Methods:

This study was designed using rather a mixed bag of methods, but it much stressed principally on "building learning process" through community participatory actions. The community leaders and representatives of both from NP and NN were invited to participate voluntarily to this action research.

Even both the NP and NN exercises were expected to achieve the same goal (impact assessment for better water management planning), but the two were assigned to hold different approaches (EA vs HIA).

The NP core activity held water-quality assessment as the prime tool, while the NN took another the health impact assessment being the key change.

The NP work plan (1998-2000) were roughly outlined as followings; (i) reviewing secondary data for identifying significant pollution sources and health impacts, (ii) developing training course modules on volunteer water-quality monitoring, (iii) training the community volunteers, (iv) organizing water-quality assessment planning activities, and (v) managing water monitoring data and used that as the key input for local water management planning.

The NN (2002) tasks consisted of (i) interviewing key informants (most likely impacted persons) on health impact situation occurred, (ii) reviewing local health status and epidemiological data analysis, (iii) organizing a training workshop for volunteers on pollution sources survey and examination, (iv) organizing a community key leaders to identify the evidence-based problem found, and proposed mitigation measures to the government, and (v) advocating policy development initiative by encouraging the community key leaders to present the causes, impacts and corrective measures disseminated and proposed to general public and decision-makers.

The Key Findings:

EA vs HIA approaches

The NP and NN with different approaches characterized the distinct outputs with respect to problem identification streamlines. The NP (Box 1) exercise based on the EA showed the communities well developed their ideas much relying on environmental impact evidence, while the NN (Box 2) illustrated the human experiences and perception towards health impacts.

Box 1: The Environmental Assessment Approach

NP Problem identification: EA

- Poor water quality.
- River channel tightly regulated by three closely interconnected dams.
- Accumulated sediments in the Pong riverbed.
- No integrated watershed conservation/management plan.
- Local community has a limited legitimate role in local water resources management & conservation.

Box 2: The Health Impact Approach.

NN Problem identification: HIA

- Skin diseases.
- Livelihood impacts; household water-use, cloth-cleaning problem, polluted bored-well etc.
- Spiritual effect; local traditions "Loy Krathong" (water-respect tradition) and Bhuddist-related rituals declined.
- Less income for most riverside dwelling families.
- Occupation impacts; orchid, vegetable gardening and fish farms died out.

The training outputs

Training the NP volunteers to monitor water-quality changes, as collectively agreed by community leaders, these were done by organizing two different sessions, 3-days full-scale each during February 1998. Thirty volunteers joined the training course, which principally consisted of planning water monitoring and testing techniques on basic water parameters. Those water parameters selected were based on what the locals perceived as being their problems encountered, these were temperature, pH, electrical conductivity velocity, dissolved oxygen, nitrate, phosphate tannin-lignin and insect larvae.

The NP volunteers and community leaders later agreed to conduct water monitoring bimonthly throughout the year with 5-volunteers turn-around per session. Initial assessment found that most volunteers were satisfied with the water testing activity. Most reasoned that they could learn and getting to know more about how the waters were changing over space and time, as well as capable of identifying the pollution sources as never experienced before.

The NP water test results were further compiled and analyzed by the community leaders, which was later disseminated to all concerned parties within the sub-watershed. In mid-1998, the community leaders and volunteers organized the stakeholder meeting at the NP Council and using that spatial-temporal water-testing data as the key input for pollution abatement discussion. Since1999, the local Council started to allocate the budget

annually to the NP community group for water-testing activities across the sub-watershed.

The NN training was focusing only on the 2-days workshop in December 2002, where thirty volunteers from six impacted sub-districts participated. The session consisted of 1-day working on water examination principle and the following day for rapid field survey. The PCD officers trained the volunteers how to use equipment and essential techniques applied to assess water pollution. The water parameters chosen were pH, temperature, electrical conductivity and dissolved oxygen. The monitoring data was later compiled and spotted onto the NN sub-watershed drawn maps. Initial assessment showed all the volunteers were able to point out pollution sources and their subsequent water impacts.

A month later after the NN workshop finished, a 1-day community meeting was organized as to examine the association between the health data collected earlier with the water-testing results. The community eventually found the key evidence correlated consistently between the health impact data (both from reports and focus-group interviews) and water pollution sites particularly those where with high electrical conductivity levels.

Water management planning: policy impacts and achievement

The above NP and NN on training and data management exercises initiated by this study were undergone further on-going self-development. The NP based on detailed water assessment merged the Council environmental plan by sponsoring routine water-quality assessment tasks conducted locally. Such water-testing data was brought for the NP sub-watershed management meetings, while participants included stakeholders (water users) reached any pollution prevention and management agreements. The large industries further developed their environmental plan for ISO 14000, while the community leaders were invited to visit and monitor the factory sites.

In 2001, the NP community initiated the Environmental Information Center-EIC, since 2001, located at the Council building. The NP-EIC committee consisted of major stakeholders; local government officers, farmers

and industrial managers. The EIC eventually became the center-point where the local partners seeking for conflict resolution and agreement on water resources uses.

The industry also shared the computers and other equipment provided for the EIC activities. The EIC recently developed a web-page (www.thai.net/kudnamsai), which aimed to inform general public and exchange experiences on water environment monitoring. The NP community-based action was later widely acknowledged locally and regionally, while other local communities and postgraduate students often visited the EIC as to learn and explore on this community-based type activity. The EIC was acting as the community-driven body helping the NP sub-watershed management resolution, while its role on information management could lessen the water impacts. Surprisingly that, no water pollution complaint was made since the EIC established, the skin rash incidences as well as water quality along the NP main channel were much improving.

Unlike, the local-based NP, the NN water management was leading to provincial environmental policy initiative. They used the HIA supported by the environmental data from snapshot surveys, establishing a set of rational recommendations locally proposed to the NN provincial government. Finally, in early 2003, the NN government did response to the community request by originating the new policy on the NN waterway revival. Such policy document showed that the local and provincial governments would do all those activities in concreted action, started in mid-2003, while the community however had relatively rather minimal role.

Lessons Learned:

The EA and HIA as applied here with a rather similar water pollution problem, but with different approach nature, their on-going development fates were leading to distinct results. The EA took the water environment as the cornerstone, this supported well to the community-based actions established locally. The EA achievement experienced here was much relying on the role of information management strategy used for local environment planning. The NP with EA approach provided clear evidence on community-based capacity building success, while this also implied a local sustainable development future.

The HIA, on the other hand, which was primarily based on the human-health standpoint, this was found rather an effective tool or a quick-fixed strategy where the provincial policy could be immediately launched subsequently. The HIA conventionally hold the health-centered perspective, while this was found by the top decision-makers for much easier and well understood for changes and thus corrective measures proposed locally were mainly accepted and possible.

The "health" perspective adopted by this study using the notion of holistic eastern-world type, while the health comprised of physical, mental, social and spiritual meanings (Wattanachai et al. 2001). The exercise as made with the NN case proved that this approach could work well, while the locals could systematically figure out what impacts had happened by linking the biomedical effect vice versa with other socioeconomic and environmental causes. However, the more rigid HIA approach as outlined by Birley (1995) was still essential, this should be the first starting point to quantify the health hazards and risks where later made these interconnected with other social and environmental factors.

The EA approach, here which centered on the water parameter assessment while in the first place followed "The Streamwatch Manual: the Complete Streamwatch Guide to Water Quality Monitoring" (Sydney Water Corporation Ltd., 1998). Later, the community volunteers preferred to add more indicators on that, usually of what things be as they observed locally. They proposed to use a series of local biota emergence phenomena as appeared whenever the pollution occurred, and that signified the degree of the pollution; starting from mild to much severe pollution levels as indicated in orders by prawn -> scale fish -> flathead fish -> snail respectively (Inmuong et al. 2001). The latter indicator could prove work well for public communication by giving a more meaningful impact information in additional to the chemical tests.

It should be noted here that both the EA and HIA as tested here, the two approaches were cooperative and led to distinct results when applied to community-based impact assessment actions. The first would rather merge the public policy adopted locally, while the latter initiated the government policy development at high level.

Acknowledgements:

I would like to thank the World Health Organization Thailand, which kindly sponsored the long-period Nam Phong project. I also thanked to the Health Systems Research Institute Thailand, while made the Nakorn Nayok project possible. Certainly, I would make a great attitude extended to all NP and NN communities and friends.

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Drug Patent and the Impacts on the Drug System in Thailand

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Abstract

Rationale: Drugs are essential for patients. International trade agreements might affect accessibility to essential drugs for many patients. Some would finally die because they do not have enough money to buy expensive drugs.

One of the major international trade agreements is the "Trade Related Intellectual Properties Rights or TRIPs". Intellectual properties rights include "patent" and "copyright". A patent is granted to inventors for any branches of industrial inventions. A copyright is granted to the owners of writings, musical composure, artwork, movies and trademarks.

Protected intellectual property rights encourage innovations and innovators are fairly rewarded. It is believed that intellectual property right protection will be economically and socially beneficial to the world in the long run.

Intellectual property right related to health policy is "drug patent". There are two subgroups for drug patent i.e. one is related to "product patent", another is related to "production process patent".

In Thailand, Patent Act has been enacted since 1979. Under this act, the protection of "product patent" right for drugs is excluded but "process

patent". The rationale for the exclusion is based on human health and livelihood. Unreasonably expensive drugs are the major concerns. The country's drug industry might also be affected if the right is granted.

During 1984-1999, the US government put pressure on the Thai government to amend the "Patent Act" and "Copy Right Act". The US government required that "product patent" must be included otherwise Thailand will be punished by abolishing the "Generalized System of Preferences, GSP" granted to Thailand. The "GSP" is granted to allow some developing countries to be able to export commodities to the US with low tariff rates. It was estimated Thailand will lose $US 165 millions or 4,125 million Baht (in 1983). Other measures will simultaneously be implemented if Thailand refuses to amend the Act. Finally, Thailand has amended the Act in 1992.

Major amendments are as follows:

1. Extend the protection to other items including food product, beverage, drugs and drug ingredients, agricultural machinery.

2. Extend protection period from 15 years to 20 years effective from the date of submission for patent.

3. Compulsory licensing must be done according to the Uruguay round on trade agreements. For instance, compulsory licensing can be used only if the owner of the patent unrightfully performed by unreasonably not producing or not selling the products. If compulsory licensing is implemented, the owner of the patent can make an appeal to the court.

4. Clauses related to drug patent as well as other regulations related to pricing and anti-dumping must be amended according to the Uruguay round on trade agreement.

Later in 1999, more amendments were done. The committee on "Drug Patent" was abolished. A system of petty patent was implemented.

The study aims at studying the scopes of the health impacts arising from the amendments of the Patent Act.

Study Methods:

Literature reviews, In-depth interviews with government officials who have duties on the related issues, group discussions with stakeholders to outline the scopes of the impacts of the amendments to be assessed in the future.

Results of the study:

The scopes of the impacts on Thailand drug systems because of TRIPs were found in these three areas:

1. Rising costs of drugs and inaccessibility to drugs especially those with AIDS
2. Hindering the development of home drug industry
3. No real technology transfer

Multinational drug companies always claim that granting drug patent is beneficial to the countries in terms of technology transfer. Because the formula of new drugs was provided, therefore countries can further develop new drugs. The former director of the Research and Development Institute of the Government Pharmaceutical Organization once said it is unlikely that Thailand will benefit from the drug patent in terms of technology transfer. Three reasons for her argument were 1) there are insufficient information in the submitted document 2) the drug companies deliberately keep essential information secret and 3) the inventions were so complicated.

In addition, the capabilities and infrastructures of Thai institutions to check whether the submissions were really new inventions are lacking.

CASE STUDY: Anti-retroviral drugs for AIDS

Drug manufacturers purchase license from various research institutions. They then manufacture drugs to sell in the markets around the world under their own brand names. For example, Bristol Myers Squipp bought license to produce an anti-retroviral drug called "Didanosine" (ddI) from the National Institute of Health who has discovered the drug. The company has modified the ingredients of the drug by adding antacid components in order to make it acid tolerable and not being destroyed in stomach. The company submitted for new drug patent in Thailand.

Moreover, the company was also submitting for new drug patent for the combined formula, for example, "Indinavir" combined with "Efavirenz" or "AZT" combined with "3TC".

The company was granted protection even though it has not discovered any new drugs at all. This enables the company to extend its right for longer period of time and hinder local drug companies to produce the drugs.

The progress of new drug development in Thailand is slow, although there is claimed that the "Patent Act" will encourage innovations. Since 1996 – 2000, most of the new drug patents in Thailand were granted to foreign drug companies.

Conclusions and suggestions:

The health impacts due to TRIPs are inevitable if applied. Serious public health problems still remain endemic in Thailand, for example, AIDS, Tuberculosis, Malaria etc. Drugs are essential for the patients with these diseases. Trade agreements need to be revised and reconsidered with concerns of health values, benefits and well being of all Thais.

Drug Patent and the Impacts on the Drug System in Thailand

Introduction:

With the small population of 60.7 millions in 2000, Thailand decisively move to globalization and international trade among its value of exports amounted to 66.4 percent of its GDP in 2000[1]. This is drawn a scene of highly export economy which may make Thailand loss or gain from the international pressures by the international trade related organizations such as World Trade Organization (WTO), World Bank etc.

Thailand is a signatory to the Uruguay round of the General Agreement on Tariffs and Trade, GATT which concluded in 1994. The primary objective of GATT was to promote and regulate the liberalization of international trade through rounds of trade negotiations. The Uruguay Round of Multilateral Trade Negotiations led to the Marrakech Agreements which established the WTO and extended the rules governing commercial relations between trading partners to a number of new aspects such as agriculture, services, investment measures and the protection of intellectual of property rights (IPR). The WTO Agreement on Trade Related Aspects of Intellectual Property Rights, TRIPs, has been focused as the quickest movement of international negotiation since 1994.

Thailand is therefore obliged to meet all the provisions of the Trade Related Intellectual Property Rights, TRIPs, effective from 1 January 1995.[2]

Rationale and Background:

TRIPs integrated into the international trading system outlines the minimum standards for protection and enforcement of IPR in the member countries of the WTO. The agreement leaves scope for the member nations to develop their IPR laws to promote their national interests. As we know, the law has to stay within the spirit of the agreement to balance interest between private producer and public consumer. The areas covered by the TRIPS Agreement are as follows: i) copyright and related rights, ii) Trademarks, including service marks, iii) Geographical indications, iv) Industrial designs, v) Patents, vi) Layout-designs (topographies) of integrated circuits and vii) Undisclosed information, including trade secrets

Patents build stronghold around inventions. Trademarks establish and identify brands. Copyright provides protection to accompanying literature and designs registrations cover novelties in shapes, forms and ornamentation, which visually impact consumers. IPR portfolio has now become an effective means for benchmarking of intellectual assets and innovative capabilities. It is believed that IPR will be economically and socially beneficial to the world in the long run [3].

Drugs are essential for patients. TRIPs agreement might affect accessibility to essential drugs for many patients. Some would finally die because they do not have enough money to buy expensive drugs. IPR related to health policy is "drug patent". There are two subgroups for drug patent i.e. one is related to "product patent", another is related to "production process patent".

In Thailand, Patent Act has been enacted since 1979. Under this act, the protection of "product patent" right for drugs is excluded but "process patent" [4]. The rationale for the exclusion is based on human health and livelihood. Unreasonably expensive drugs are the major concerns. The country's drug industry might also be affected if the right is granted.

During 1984-1999, the United States Trade Representative (USTR) put pressure on the Thai government to amend the "Patent Act" and "Copyright Act". The USTR required that "product patent" must be included otherwise Thailand will be punished by abolishing the "Generalized System of Preferences, GSP" granted to Thailand. The GSP is granted to allow some

developing countries to be able to export commodities to The US with low tariff rates. It was estimated Thailand will lose $US 165 millions or 4,125 million Baht (in 1983). Other measures will simultaneously be implemented if Thailand refuses to amend the Act. Pressures from the USTR since 1986 forced Thailand to open the Tobacco market and Thailand has finally amended the Patent Act in 1992[5].

Major amendments are as follows:

1. Extend the protection to other items including food product, beverage, drugs and drug ingredients, agricultural machinery.

2. Extend protection period from 15 years to 20 years effective from the date of submission for patent.

3. Compulsory licensing (CL) must be done according to the Uruguay round on trade agreements. For instance, compulsory licensing can be used only if the owner of the patent unrightfully performed by unreasonably not producing or not selling the products. If compulsory licensing is implemented, the owner of the patent can make an appeal to the court.

4. Clauses related to drug patent as well as other regulations related to pricing and anti-dumping must be amended according to the Uruguay round on trade agreement.

Later in 1999, more amendments were done. The committee on "Drug Patent" was abolished. A system of petty patent was implemented.

The study aims at studying the scopes of the health impacts arising from the amendments of the Patent Acts.

Study Methods:

Literature reviews, In-depth interviews with government officials who have duties on the related issues, group discussions with stakeholders to outline the scopes of the impacts of the amendments to be assessed in the future.

Results of the Study:

1. TRIPs and its impacts

The scopes of the impacts on Thailand drug systems because of TRIPs were found in these three areas:

1.1 Rising costs of drugs and inaccessibility to drugs especially those with AIDS

There is also much evidence that the number of suppliers is quite important in determining prices. The WHO has a 'rule of five,' which means it gets the best price on a drug when there are at least five suppliers. When Brazil began to purchase generic copies of 3TC, an important HIV drug, it was paying US$20,000 per kilo for the imported raw materials for the drug. Today there are more suppliers, and Brazil pays around US$500 per kilo for the raw materials, only 2.5 percent of the original price[6]. Table 1 compares price of drug e.g. Stavudine and local made by Thai Government Pharmaceutical Organization (GPO) which confirmed the relationship between number of suppliers and price.

Strength of d4T(mg)	Price of BMS(baht)	Price of GPO (baht)
30	100	11
40	104	15

Table 1: *Comparison of d4T Price between Bristol Myers Squibb (BMS) and GPO*

Reference: *http://www.AIDsaccess.com/d4T.html*

The former director of Research and Development Institute (Thai GPO) said "patented drugs price is very high and affects the accessibility especially of antiviral drugs. Thai GPO had begun its research and development of AZT 100 mg in 1992. At that moment the original AZT pricing was 40 baht. It was in contrary of our price which was only 8 baht. This is the competition...."

In the Doha declaration (2001), ministers stress that it is important to implement and interpret the TRIPS Agreement in a way that supports public health by promoting both access to existing medicines and the creation of new medicines. They separate declaration on TRIPS and public health which is designed to respond to concerns about the possible implications of the TRIPS Agreement for access to medicines[7].

An Asia Pacific regional consultation was held in Colombo on 17-19 April 2003, on the WTO/TRIPS Agreement and Access to Medicines. One part of the statement says that the traditional issues taken up by those involved in promoting essential pharmaceutical drugs (i.e., drug efficacy, safety of drugs, saving of health expenditure through the focus on essential drugs) have been overtaken in recent years by the problem of public access to medicines caused by patents, especially after the WTO's TRIPS Agreement came into force after 2000[8].

TRIPS has placed constraints on WTO Members; for example, they no longer have flexible policy space to exempt food and drugs or other sectors from patentability (as they had before), and the minimum period of protection for patents has been mandatorily fixed at longer terms than existed in most countries. TRIPS has tilted the balance between the IPR holder and the public interest in favour of the IPR holder, vis-à-vis consumers and producers that are not IP holders. As a result, prices of drugs and other items, and the cost of production, have escalated [8].

Despite this adverse recent situation, participants of the workshop agreed that TRIPS does contain several types and degrees of flexibilities that allow WTO Members to take certain measures to over-ride patent holders' exclusive rights. The workshop extensively discussed these flexibilities and measures, especially compulsory licensing, parallel importing and government use of patents. Legal experts at the workshop illustrated how many developed countries (including the US, the UK, etc.) have for years been making use of these measures for the public purpose [8].

1.2 Hindering the development of home drug industry

1.3 No real technology transfer

Multinational drug companies always claim that granting drug patent is beneficial to the countries in terms of technology transfer. Because the formula of new drugs was provided, therefore countries can further develop new drugs. The former director of the Research and Development Institute of the Government Pharmaceutical Organization once said it is unlikely that Thailand will benefit from the drug patent in terms of technology transfer. Three reasons for her argument were (i) there is insufficient information in the submitted document, (ii) the drug companies deliberately keep essential information secret and (iii) the inventions were so complicated.

In addition, the capabilities and infrastructures of Thai institutions to check whether the submissions were really new inventions are lacking.

It is not only scarce know-how or trade secrets needed to manufacture a specific product but also related to the market size. Even if a country could manufacture a specific product, the domestic market may be too small to justify production for domestic use only [6]. Orphan drugs which use to treat rare or neglected diseases, for example, are currently facing requests for research and development. Especially the drugs for neglected diseases which most of the diseases occurred in the developing countries including Thailand such as tuberculosis, malaria, meningitis, etc. It would be possible, but not efficient, for pharmaceutical company to develop these drugs for domestic.

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Drug manufacturers purchase license from various research institutions. They then manufacture drugs to be sell in the markets around the world under their own brand names. For example, Bristol Myers Squipp bought license to produce an anti-retroviral drug called "Didanosine" (ddI) from the National Institute of Health who has discovered the drug. The company has modified the ingredients of the drug by adding antacid components in order to make it acid tolerable and not being destroyed in stomach. The company submitted for new drug patent in Thailand.

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The progress of new drug development in Thailand is slow, although there is claimed that the "Patent Act" will encourage innovations. Since 1996 – 2000, most of the new drug patents in Thailand were granted to foreign drug companies.

2. Current situation: from Doha to Cancun

In November 2001, the United States and the other members of the World Trade Organization signed the Doha Declaration on the TRIPS Agreement and Public Health, which states that the TRIPS Agreement "can and should be interpreted and implemented in a manner supportive of WTO members' right to protect public health and, in particular, to promote access to medicines for all." The Doha Declaration specifically reaffirms the right of WTO members to issue compulsory licenses and to determine the grounds on which they may be issued[9]. One issue that delegates left unfinished was spelled out in paragraph six:

> *6. We recognize that WTO members with insufficient or no manufacturing capacities in the pharmaceutical sector could face difficulties in making effective use of compulsory licensing under the TRIPS Agreement. We instruct the Council for TRIPS to find an expeditious solution to this problem and to report to the General Council before the end of 2002.*

The Ministers at Doha could not however, agree on how to solve the problem of how those developing countries without domestic pharmaceutical manufacturing capacity could effectively use the CL. This was known as the Paragraph 6 problem, named after that paragraph dealing with this issue in the Doha Declaration. An option for these countries is to grant a CL for the import of such drugs. However the supply of drugs for these countries to import may be limited and insufficient because of constraints placed by the TRIPS Agreement on the countries that have the capacity to produce and export the generic versions [10].

The reason is that the TRIPS Agreement (Article 31(f)) requires that the production of generic drugs under a CL is "predominantly for the supply of the domestic market". This restriction would mean that exports of drugs produced under a compulsory license is only possible only if the "predominant" portion of the production output has been supplied to the domestic market. This raises the concern that the non-predominant portion may not be sufficient for the needs of the importing country or countries [10].

On 16 December 2002, the Chair of the TRIPS Council came up with a new text containing a proposed solution. "On the positive side, the new agreement completely rejects the efforts of the US, Japan, the European Union and the WTO Secretariat to limit the scope of diseases for compulsory licensing, and it also does not require high standards such as epidemics or emergencies. Routine public health problems can be addressed in the new agreement [11].

WTO Members also agreed to an accompanying statement by the General Council Chair which spells out a number of "key shared understandings" of how the Decision would be interpreted and implemented. The Chair's Statement is widely known to be the US' attempt to seek "comfort language" that would assuage concerns of its powerful pharmaceutical lobby that the Decision would allow generic manufacturers to gain a stronger foothold in the profitable pharmaceutical market. The US had, in mid-August 2003, come up with its proposal for a Chair's statement that would enable them to agree to the December 16 text — 8 months after the US stalled negotiations by withholding consensus after (almost) all WTO Members had agreed to it in December 2002 [10].

After hurried consultations in the few weeks before the end of August, Members agreed to the final version of the Chair's Statement (10). On August 30, 2003, Decision removes final patent obstacle to cheap drug imports.

WTO member governments broke their deadlock over intellectual property protection and public health. They agreed on legal changes that will make it easier for poorer countries to import cheaper generics made under compulsory licensing if they are unable to manufacture the medicines themselves [12].

The Fifth Ministerial Conference of the World Trade Organization (WTO) that took place from 10 to 14 September 2003 in Cancun, Mexico, ended without agreement on the Ministerial Text. It is the second time in the history of this organization that something like this happens, following the failure of negotiations in Seattle (1999). The main goal of the Cancun Ministerial Conference was to assess the progress in the negotiations and other efforts under the Doha Development Agenda, adopted at the Ministerial Conference held in the capital of Qatar in 2001. The meeting failed primarily as a result of the acute differences in interests dividing developed

countries (mainly the United States and the countries of the European Union) from developing countries [13].

In fact, the greatest achievement of the Conference may just be the consolidation of a group of 20 countries (called the G20+, as its number of members is expected to grow) which, with Brazil, Argentina, Egypt, India, China and South Africa, among others, joined forces to defend the interests of developing countries in multilateral trade negotiations. In the press conference held by this group at the end of the meeting, Brazilian Foreign Minister Celso Amorim said the group "comes out stronger than it was before Cancun." [13].

The official closing session adopted a brief and simple Ministerial Statement instead of the substantive Ministerial Text that had been under discussion since the first draft appeared in Geneva in July. The Statement expressed that all the participants had worked hard to make considerable progress under the Doha mandates, but that "more work needs to be done in some key areas to enable us to proceed towards the conclusion of the negotiations." [13].

The WTO's next step is negotiating a permanent amendment to TRIPS about this issue, the 'paragraph 6' problem. Thailand should negotiate for the amendment that is workable and makes it as easy to do efficient local production. This is to get generic versions of patented medicines as it is for the few rich countries with sufficient local manufacturing capacity in a manner that supports public health and access to medicines for all.

Conclusions and Suggestions:

The health impacts due to TRIPs are inevitable if applied. Serious public health problems still remain endemic in Thailand, for example, AIDS, Tuberculosis, Malaria etc.. Drugs are essential for the patients with these diseases. Trade agreements need to be revised and reconsidered with concerns of health values, benefits and well being of all Thais by taking the following steps: [8, 14]

1) Limit the scope of approval of patent applications to patents that are genuinely novel or involve an inventive step, and to reject applications that are not novel or do not satisfy the criteria of an invention, or that involve only minor developments (such as slightly different dosage or formulation);

2) Examine existing legislation and determine whether there are inadequacies and weaknesses, and if so, to amend these laws and introduce provisions that maximize the rights of the country to be able to adopt policy measures and options such as CL, parallel imports and government use;

3) Examine the national situation regarding patents and prices of medicine in relation to the diseases, and devise measures such as government use, compulsory licensing and parallel imports in order to effect importation or production or medicines;

4) Examine and resolve the practical and administrative measures required, such as establishing institutions or competent authorities or an inter-agency committee, appropriate appeal procedures and appropriate systems and rates of compensation for the patent holder;

5) Establish institutional arrangements for coordination of policies and measures between different government departments involved in the issue (e.g., Ministry of Public Health, Ministry of Commerce etc);

6) Establish consultative mechanisms by governments with NGOs, social movements and private sector local generic drug producers or potential producers so that a coordinated national response can be effectively made;

7) Establish a system of information sharing, communications and research which NGOs and social movements should take steps to monitor, analyze the developments in TRIPS, to analyze the national status and situation regarding patents and medicines, and to actively communicate their views and proposals to the policy makers;

8) Encourage generic drug manufacturers to strengthen their network activities to expand the production of essential, needed medicines and to make these available at the lowest possible prices. They should try their best to transfer technology and production know-how to all countries in the region;

9) Establish cooperation activities among governments in the region themselves, not only to share information and best practices, but also to establish among themselves cooperation arrangements for production, technology-sharing, distribution, import and export of medicines, as well as the issuing of compulsory licenses and other measures.

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Better Power For Health: The Strategic HIA Study on Thailand's Power Development Plan

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Power plant projects in Thailand always have significant impacts on health. The call for better power plant projects for health has been echoed in Thai society. However, as long-term social infrastructure, power plant projects are hardly determined by each stand-alone decision-making process. Instead, they are decided in a long-term investment plan, which determines what kinds of project and technology should be invested and, consequently, what kind and levels of impacts will be generated in the future.

Therefore, to develop healthy public policy in the energy sector, strategic direction or planning is very important. As one of strategic planning support tools, strategic HIA on power development plan study is certainly useful. This strategic HIA study has concentrated on the latest National Power Development Plan (PDP2004), and other possible alternatives to this PDP2004, as the main policy mechanism in Thai power sector. The possible alternative will be based on the National Energy Strategy, launched in August 2003, as a political platform for strategic planning and public discussion.

This paper aims to use strategic HIA to inform and seek opportunities for public discussion and policy-oriented learning on strategic directions in Thai power sector and their health and other consequences. This can be recognized as one of the efforts toward healthy public policy in Thai power sector.

The paper will start by the introduction of power development plan as the main policy mechanism. Then, the conceptual framework, its impact indicators and methodology will be introduced in part II and III. After that, three policy options will be presented in part IV and follow by an analysis and comparison of strategic results from these three policy options in part V. After that, the insights from public discussion will be presented. From all analysis and information, the policy implications will be suggested. Lastly, the final conclusion will be made in order to evaluate how well health perspective can work as an engine for sustainable energy development in this country.

1. Power Development Plan

The Power Development Plan (PDP) is the long-term master plan of the Thai power sector. PDP determines the construction of all new power plants according to the long-term power demand forecast. The decisions on energy options will be made in the planning process and these include fuel and power plant technology, power generating capacity of each project, and potential area for construction. Accordingly, the other related energy projects, such as lignite mining, gas pipeline, as well as the expansion of the power transmission system will be developed.

Therefore, PDP will set forth the development direction of the electricity as well as the energy sector. Hence, it will determine the impacts and consequences to the society not only the emissions and other externalities but also the investment, import burden, fuel price risks, employment, technological development, etc. This is the main reason to focus on PDP as the main policy mechanism in Thai power sector.

1.1 PDP Decision-making Process

The first step of the PDP planning process is the forecast of future electricity demand, which is responsible by the sub-committee of the Ministry of Energy. Then, Electricity Generating Authority of Thailand (EGAT) will plan the PDP in respond to the forecast.

EGAT will start from consideration of the existing power plants and the progress of the under-construction projects. Then, different options of fuel and power plant technology will be analyzed on several technical factors and the economic viability. These data from the analysis will feed into the least-cost programming and the EGAT's least cost option will be selected and presented as the EGAT's PDP to the decision-making process.

The political decision-making process has four main steps. First, it starts from the Board of EGAT, which is chair by senior governmental staff or senior academic. Then, it has to be considered by The Energy Policy Executive Committee, before going to the National Energy Policy Council, which is chair by the Deputy Prime Minister. The final decision is made by the Cabinet[1].

1.2 Problems of the existing PDP process

Although for many years, the local people and many civil society organizations has been advocated for participation in energy planning and also, social conflicts over the dead-lock situation at the project level have been occurred cases after cases, there still has been no public participation at all through out the whole planning process. Not only the civil society that has no way of participation, the parliament, senate, the independent organizations, academics, consumer groups, mass media, also has no role to play in the process[2]. This leads to three main weaknesses of this planning approach.

First, although the electricity development has vast impacts to the society, the goals of the PDP planning are still limited to only the energy security and the utilities' least cost solution. The other important societal goals, like self-sufficient economy, balance of payment (BOP), employment, the environment, health, have never been included.

Second, the forecast of power demand has always been too high for more than a decade, leading to the excess power plant projects and over generating capacity. The main reason is the structure of electricity tariff, where EGAT can push the excess costs to the consumer.

Last, since renewable energy technologies are perceived by EGAT neither economically nor technically viable, the fuel and technology options are always limited to large-scale conventional energy projects, which are fossil-fuel power plant and large hydroelectric dam. In other words, there has been no real comprehensive consideration of various energy alternatives.

1.3 The Need for Alternative PDP

The concept of alternative PDP was developed in Thailand in 1999, when Sustainable Energy Network for Thailand (SENT) proposed Thai government to invest in sustainable energy technologies instead of investing in a controversial coal-fired power plant project. This is because sustainable energy choice will lead to higher GDP contribution for the national economy, reduce BOP burden, create more jobs, and lower GHG emission compared to the coal-fired power plant[3]. Concurrently, the critiques of overestimated demand forecasting and high reserve margin of the power sector were also echoed, leading to the final decision to postpone the project.

However, SENT's study is still at the project level. The actual alternative PDP was suggested by the National Economic and Social Advisory Council in 2004, during the public debate on government privatization policy for Thai power sector. Since one of the main forces for privatization is to release public investment and debt burden, the aim of this alternative PDP is to shows how alternative PDP can reduce investment requirement and, thus, relax the pressure for privatization[4]. Unfortunately, this alternative PDP did not link to other development goals and impacts.

Concurrently, in August 2003, Thai government has launched the National Energy Strategy, which set up quite ambitious targets for energy efficient and renewable energy development. The strategy also provided new information on the potential of renewable energy and energy efficiency as main alternative for power development in Thailand[5]. However, the strategy did not show the direct links between its proposal and its environmental social and health consequences.

This strategic HIA study followed the concept of alternative PDP and the National Energy Strategy by showing that an alternative way is possible and perhaps better. At the same time, the study will include another possible alternative to the PDP2004 suggested by EGAT as well. Furthermore, to facilitate public discussion on these strategic choices, this study will also include the series of public discussions and communications.

2. Conceptual Framework

To address the healthier policy directions in Thai power sector, this HIA study will assess the impacts at the strategic level; namely at power development planning. The main focus is to analyze the strategic choices to inform strategic decisions about doing the right things. Although strategic impact assessment is more proactive in promoting healthy public policy and sustainable development, the strategic assessment is normally less specific, especially when compared to assessment at project level. Sometime, the strategic assessment becomes fuzzy and needs important judgment and educated guess[6].

2.1 Broad Perspective HIA

Assessing strategic impacts on health is certainly complicated. Generally, there are two basic ways of assessing health impacts from the power development planning. The first approach is based on bio-medical model of health, which mainly focuses on the calculation of mortality and morbidity from main pollutants emitted from the power plants. On one hand, this approach may provide specific figures on human health impacts. On another hand, it usually lacks of the critical links with other important aspects, such as economic and social aspects. The second approach is based on socio-economic model of health, which focuses on the changes of the determinants of health in broader perspective. Although the second one is less specific, it can provide overall picture of changes, which may be more attractive in promoting healthier policy options.

This study applies the broader perspective, since this approach can provide more rooms and aspects for public discussion, compared to specific bio-medical model. It also follows the concept of holistic health as stressed in Thailand's health system reform. Based on this concept, health

is an outcome of several inter-related factors, so-called supportive environment. This refers to an ecosystem health approach which identify three main aspects; namely economic, environment, and social aspects, of healthy living, as presented in Figure 1.

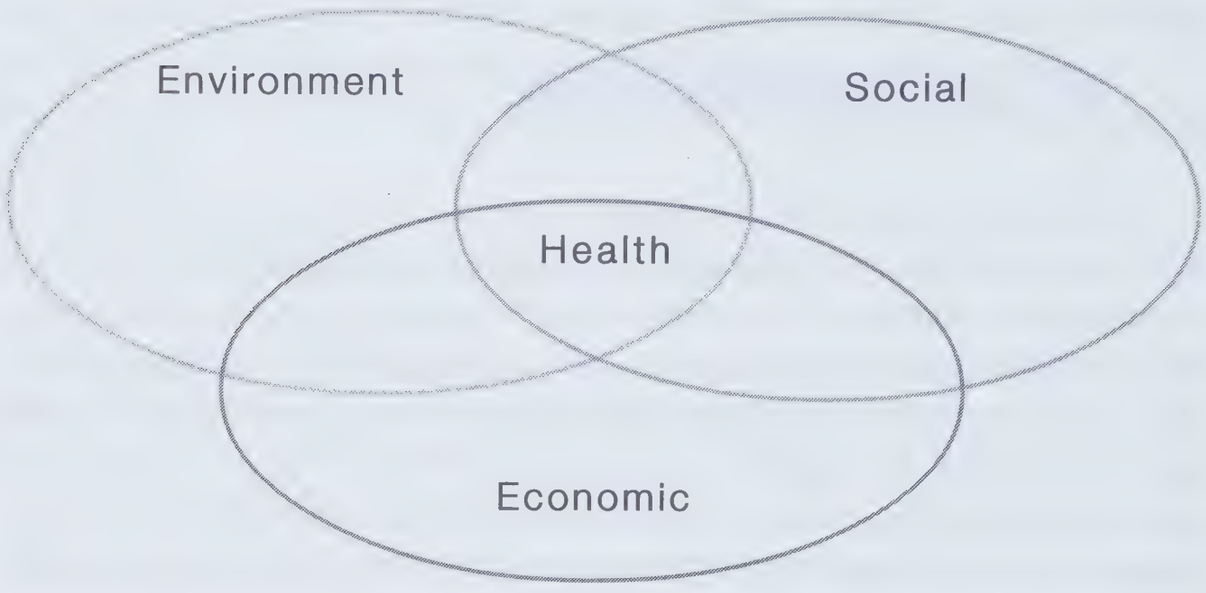

Figure 1: *Ecosystem Health Approach*
Source: *Jean Lebel, 2003 7*

2.2 Impact Indicators

In economic term, energy expenditure is around 15% of total household expenditure and its share has continuously increased for these recent years[8]. As an energy-imported country, the oil price fluctuation is always hurt Thai economy from the national to individual levels. Investment in power sector is also the huge burden for Thai economy. Consequently, both investment burden and rising fuel costs cause higher burden on balance of payment (BOP), which is also a critical indicator for a small economy in the more risky world. Although these economic indicators may not directly links to health outcomes, it certainly links to economic status of Thai economy and consequently, of Thai households. More importantly, it can also provide an insight on economic consequences of different policy options, which are always at the heart of public debates on energy issues.

Therefore, in this paper, four economic indicators; namely investment burden, fuel cost, total cost, and BOP burden of each policy options will be analyzed.

The main environmental concerns for power sector on health impacts are air pollution and greenhouse gas emission. Three main pollutants; NO2, SO2 and TSP, which obviously cause severe health impacts, will be assessed in this paper. Unfortunately, since Thailand's power development plan (PDP) does not provide information on location of all future power plants, it is not possible to analyze the direct impacts on mortality and morbidity. However, these pollutant indicators can roughly show the overall environmental impacts resulted from different policy options. For greenhouse gas emission, it can cause severe health impacts through global climate change and its increasing extreme weather events in the longer term. Moreover, analyzing impacts on greenhouse emission may be important for the discussion in UN Climate Change Convention and Kyoto Protocol.

The social aspect is perhaps more difficult in terms of identifying specific indicators. Based on recent conflict situations in the country, two main concepts have been applied in this study. The first concept is decentralized power systems utilizing domestic renewable resources, which generally provide more rooms for public participation and controls over the power sector. The second idea is the social conflicts and tensions caused by the large-scale conventional power plants. Followed these two ideas, four indicators are hypothetically set, including decentralization ratio, concentration ratio of the four largest firms, renewable share in power generation, and number of new large fossil-based project in each policy option. In fact, job creation should be one of the main social impact indicators, but, unfortunately, insufficient information blocks the possibility to include it in this study.

2.3 Strategic Assessment and Public Participation

Some of these impact indicators can also be referred to the principles and goals of the 9th National Development Plan[9], which are based on the King's philosophy of self-sufficient economy, and the present government policy as well. This includes the BOP target, more self-reliance both in Thai economy and in the energy sector, alleviation of air pollution problem, de-

velopment of clean technology, and supportive mechanisms for decentralization. Therefore, by following this line of though, this strategic HIA is, in fact, quite similar to Strategic Environmental Assessment (SEA), which aims to provide stronger links between the specific planning process and broader sustainable development goals.

It is also very important to note that, like other HIA study, the calculation of all impact indicators is just a part of the HIA and SEA process. Other equally important part of HIA is public participation and policy influence. This strategic HIA has also conducted the series of public discussion in forms of public seminar, sustainable energy trip and public communications, both in Bangkok and regional provinces.

3. Methodology

This study applies the long-term energy planning tool for assessing strategic impacts. Its methodology can be divided into four main steps (Figure 2), as followed.

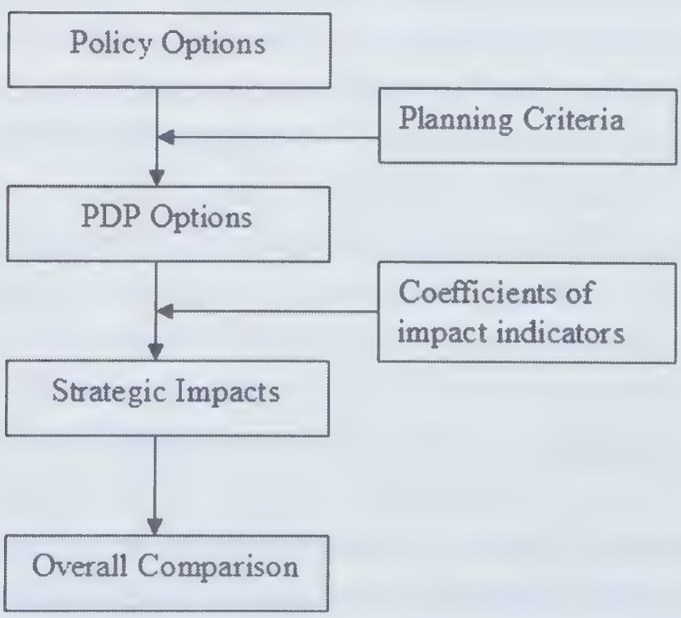

Figure 2: *Methodology for the Strategic Health Impact Assessment*

1. **Policy Options**. In this step, the three policy options will be described with the main directions and priorities of energy options for power development planning.

2. **PDP Options**. Then, all three policy options has to be readjusted to fit with the power planning criteria both in terms of 15% reserve margin and sufficient energy generations in order to ensure system reliability. After the re-adjustment, these policy options will be presented in the form of three PDP options with the investment and generation details.

3. **Calculating Strategic Impacts**. The strategic impacts of all three PDP options will be calculated based on their investment and generation plans and the coefficients of impact indicators, as previously explained. The coefficients of each power technology, which will be utilized differently in each PDP option, are shown in the Appendix 1.

4. **Comparison of Results**. After the calculation, all impact indicators of the three PDP options will be presented and compared with each other. The comparison will lead to the discussion in three main aspects as mentioned above, before identify the most suitable options in health perspective.

The result of this calculation, combined with relevant information on local sustainable energy potentials, has been used to stimulate public discussion on energy policy direction in each public seminar in order to gain more insightful recommendations from different perspectives.

4. Policy Options

4.1 The Existing PDP (PDP-Gas)

The present Power Development Plan (PDP2004) was approved by the Cabinet in September 2004. It was based on the power demand forecast, which assumed the constant annual economic growth rate of 6.5 percent through out the period (2004-2015).

Consequently, 23 new power plant projects were planned in addition to the seven projects, which are called 'under construction', even though some projects, particularly the Nam Theun 2 in Laos, are actually still in the decision-making process. These new projects can be divided into two groups by the period of construction. During 2004-2010, five new projects were decided with gas as the fuel. Some of these projects are opposed by the local people and civil society organizations, especially the Jana and the Kang Koi Gas Power Plant Projects. For 2011-2015, 18 new projects were planned with gas as the fuel for all of these projects.

It is clear that the future of Thai power sector will largely rely on gas, which will account for 81 percent of power generation in 2015. Moreover, it is important to emphasize that, during the negotiation process of privatizing EGAT, the government has agreed that EGAT will be responsible for half of the new projects between 2011-2015, equal to nine projects. For the other half, the government will open the bidding process. However, EGAT subsidiaries may enter the bidding and compete with private firms.

4.2 EGAT's alternative PDP (PDP-Coal)

Since PDP2004 is mostly relied on gas, EGAT has expressed their concern on the energy security. Therefore, they propose that the new projects should utilize more coal to be more balance in fuel diversification. However, since the discussion is still going on and thus, the proposed capacity for coal is not concluded yet. So, this study has assumed that half of the new projects or nine power plants will use coal.

4.3 The Alternative PDP

a) Principle

The development of alternative PDP has followed four principles, which are important in Thai society. The first is the Ninth National Development Plan, which follow the King's Sufficient Economy Philosophy. The Plan emphasizes on the more balance economic growth and decreasing the foreign dependence.

The second fundamental principle is the National Energy Strategy which aims to improve energy efficiency and promote renewable energy in the country, as explained earlier. Thirdly, the alternative PDP should base on the present potential of domestic energy resources and the present energy technology, which means that the alternative PDP will be pragmatic and feasible under the present resources and technology. Lastly, more realistic assumptions of the power demand forecast is crucial to prevent the over investment in the power system expansion.

b) Measures

Based on the four principles, five measures have been employed to develop the practical alternative PDP.

Firstly, the power demand forecast has been adjusted to the more realistic annual economic growth rate, since in the twenty-years record, the long-term economic growth rate of this country was just around 5.6% not 6.5% as assumed by the government. At the same time, the forecasted demand in 2004 should be changed to the actual peak demand, which is almost 300 MW lower than forecasting. This measure is very important in preventing Thai power sector from over-investing due to over-forecasting as usually happened before.

Then, Demand Side Management (DSM) and energy saving is the first priority because of the low investment cost with low negative impacts. From overall DSM potential of around 2,000-3,000 MW, 2,400 MW of DSM in 2015 is applied in this PDP-Alternative.

Next, the high potential of various renewable energies will be ex-

ploited. The promising renewable energy in Thailand includes biomass and biogas, solar, mini-hydro, and wind. As mentioned earlier, renewable energy usually receive low attention within the existing EGAT's PDP process. Table 1 presents the huge differences between power potential and existing install capacity and the government target to promote renewable energy. It is clear that, the PDP-Alternative is going along the same line of the government target with small modification. Moreover, in 2015, the PDP-Alternative will employ only less than half of the overall potential.

Furthermore, the alternative PDP also employs Co-generation System that has much higher efficiency due to the combined production of heat and power in one system. This system can be based on several industrial estates around the countries, with the overall potential of 3,000 MW of new install system.

Resources	Power Gen. Potential (MW)	Present Install Capacity (MW)	Government Target (MW)		Planned in PDP-Alternative (MW)	
			2006	2011	2011	2015
Biomass	7,000	609.5	703	1,600	1,500	2,700
Biogas	900	4.6	12	100	270	470
Solar	5,000	5.5	21	250	270	470
Wind	1,600	0.2	26	350	100	260
Micro-hydro	700	2.0	26	350	180	300
Geothermal	N/A	0.5	6	10	-	-
Total	15,200	622.3	774	2,410	2,320	4,200

Table 1: *Renewable Energy Potential, Present Install Capacity in 2004, Government Target and The Planned Capacity in PDP-Alternative.*

Source: *Decharut Sukkumnoed, 2003*[10]

The fifth energy measure is the re-powering of the existing EGAT's power plants, which is the construction of new power plants to replace the existing ones. This will improve the energy efficiency of the old plants and avoid the potential conflicts in new project site.

After employing all five measures, it is firmly possible to cancel the new conventional projects. These include the two controversial projects, Nam Theun 2 Dam in Laos and the Jana Gas Power Plant, as well as the other 19 new gas power plant projects. Moreover, three projects can be postponed from 2009 to 2010 and 2011. In addition, the consumption of fuel oil and diesel for power generation in 2004-2006 will be reduced. The overall picture of PDP-Alternative is presented in Figure 3.

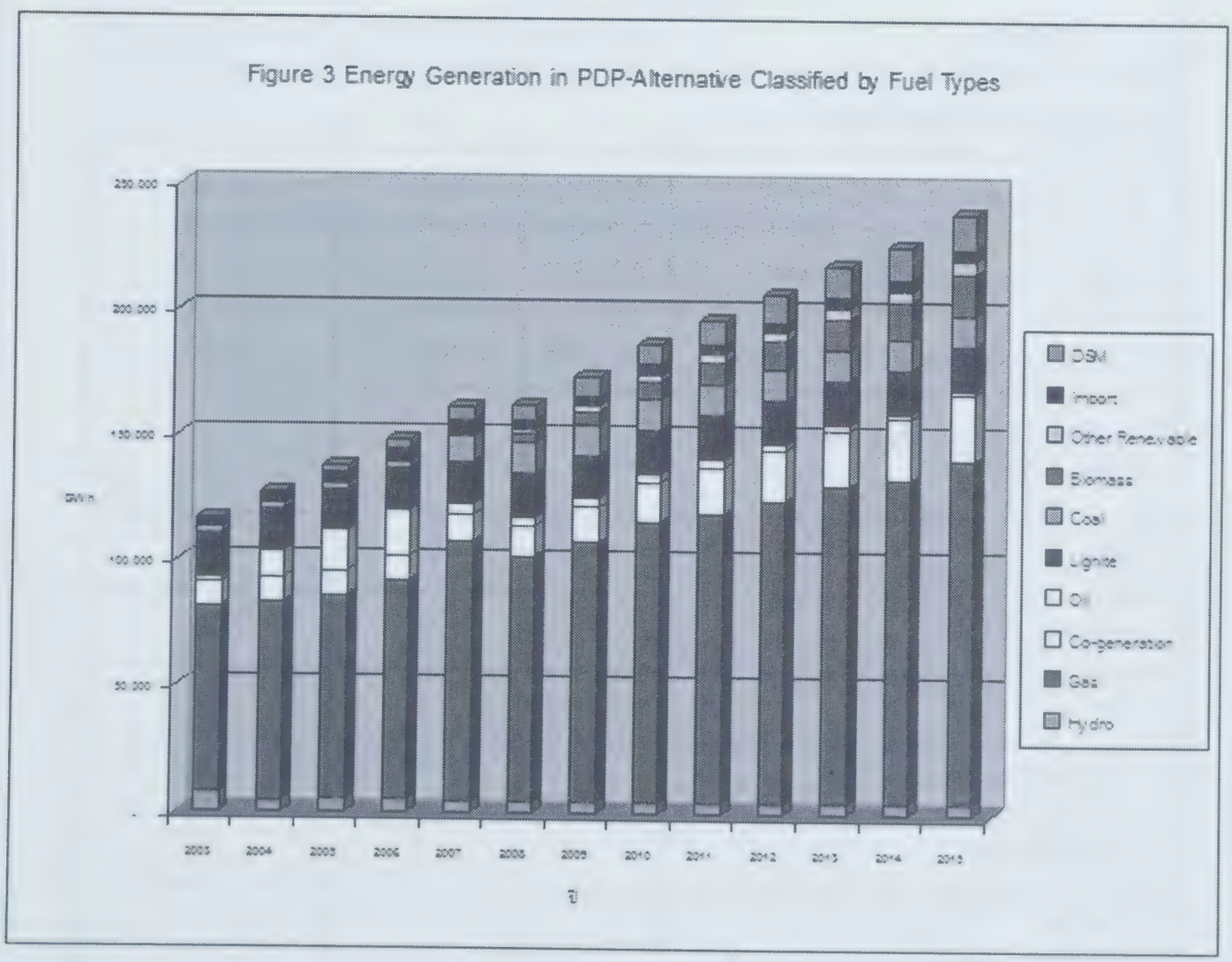

Figure 3: *Energy Generation in PDP-Alternative Classified by Fuel Types*

4.4 Main Differences in Three PDP Options

Table 2 presents the main differences in three PDP options. Obviously, the revising of demand forecasting and DSM can lower the power demand and consequently installed capacity and energy generation in the PDP-alternative without causing any problems for power system reliability. It is also clear that the proportions of energy generation in these three PDP options are significantly difference. PDP-Gas will push Thai power system to be based on natural gas up to 81%. PDP-Coal tries to avoid this situation by increasing coal's fuel share from 11% to 27% and reduce natural gas share down to 65%. PDP-Alternative maintains natural gas share at 72% and Coal at 13% but increase the renewable energy share from 2% up to 10% in 2015.

Items	PDP-Gas	PDP-Coal	PDP-Alternative
1. Assumed Economic Growth Rate (%)	6.5	6.5	5.6
2. Power Demand in 2015 (MW)	40,978	40,978	36,253
3. Install Capacity in 2015 (MW)	47,334	47,334	41,485
4. Energy Generation in 2015 (GWh)	265,786	265,786	224,910
5. Proportion of Energy Generation in 2015 (%)			
- Gas	81	65	72
- Lignite & Coal	11	27	13
- Oil	1	1	1
- Renewable energy	2	2	10
- Large hydro	2	2	2
- Import	3	3	2

Table 2: *Main Differences in Three PDP Options*

5. Strategic Results

From the calculation, the overall strategic results are presented in Table 3 as the comparison between these three PDP options in three main aspects; namely economic environment and socio-political aspects. The result of each item is presented in terms of the overall period (2003-2015) and/or at the final point of planning term (2015), depended on its relevancy.

Items	Unit	PDP Options			Gas-Alternative differences	
		Gas	Coal	Alternative	Unit	%
Economic Aspect						
Investment Cost 2003-2015	Billion THB	642.4	749.5	628.1	14.3	2.22
Fuel Cost 2003-2015	Billion THB	2,973.5	2,898.5	2,599.7	373.8	12.57
Fuel Cost 2015	Billion THB	330.9	304.1	257.9	73.0	22.05
Total Cost 2003-2015	Billion THB	3,932.6	3,993.3	3,600.7	332.0	8.44
Import Burden 2003-2015	Billion THB	2,557.2	2,623.0	2,242.7	314.5	12.3
Environmental Aspect						
GHG Emission 2003-2015	Million Ton CO2 eq.	1,221.2	1,259.3	1,090.6	130.5	10.50
GHG Emission 2015	Million Ton CO2 eq.	129.9	143.6	103.0	26.9	20.72
NO2 Emission 2015	Thousand Ton	143.8	258.6	138.7	5.1	3.57
SO2 Emission 2015	Thousand Ton	187.2	297.8	170.6	16.6	8.85
TSP Emission 2015	Thousand Ton	299.1	318.0	240.9	58.3	19.5
External Cost 2003-2015	Billion THB	2,903.3	3,134.1	2,704.4	230.8	7.95
External Cost 2015	Billion THB	283.6	366.3	245.1	38.6	13.60
Socio-Political Aspects						
Concentration Ratio CR4 2015	%	57.46	57.46	57.21	0.25	
Decentralization 2015	%	6.98	6.98	22.61	-15.63	
Domestic Renewable 2015	%	1.95	1.95	9.57	-7.62	
New Large Projects 2003-2015	No.	27	27	6	21	77.7

Table 3: *Overall Comparison of Three PDP Options*

Source: *Own Calculation*

5.1 Economic Aspect

From Table 3, it can be clearly seen that, in terms of the total cost, the PDP-Gas and PDP-Coal are very close with each other. PDP-gas has its advantage in terms of lower investment burden, but PDP-coal provides the cheaper fuel cost, as a result of its lower dependency on natural gas. However, although PDP-Coal offers the cheaper fuel, its coal supply needs to be imported from other countries. As a result, in terms of balance of payment burden, PDP-Coal becomes less attractive compared to PDP-Gas. Therefore, from these results, the EGAT's proposal to increase imported coal in its fuel mix does not seem to provide significant economic benefits for Thai power sector.

Due to its adjustment for better demand forecasting and more energy efficiency investment, PDP-Alternative provides some benefit in terms of reducing investment burden (around 2.2% compared to PDP Gas). More importantly, as a result of its investment in domestic renewable resources, which is less risky in terms of fuel costs, it can reduce the overall fuel cost (2003-2015) by 12.57% and reduce the fuel costs in 2015 by 22.05%. All together, PDP-Alternative can reduce the total cost by 332.0 Billion THB (or 8.44% lower than PDP-Gas) and also reduce the import burden by 314.5 Billion THB (or 12.3% from PDP-Gas).

Therefore, for small energy-import country like Thailand This can be seen as an important benefit in providing some buffer for future oil price risk (Figure 4). It can also release economic burden both in terms of investment requirement for Thai power sector and BOP for Thai economy as a whole.

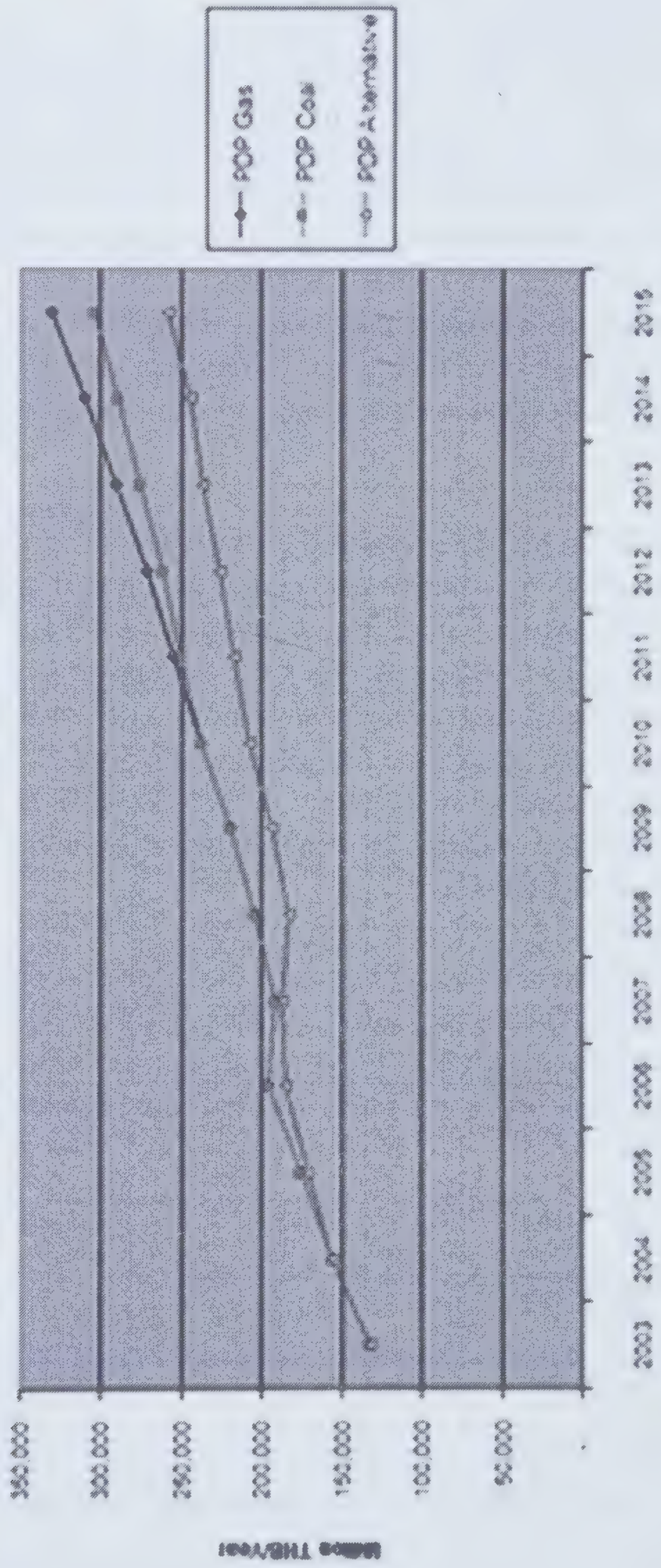

Figure 4: *The Comparison of Fuel Cost in Three PDP Options*

5.2 Environmental Aspect

Unsurprisingly, PDP-Coal, which has the highest proportion of imported coal in the fuel mix will lead to the most negative impacts in all items. It will increase NO2, SO2, TSP and Greenhouse Gas Emission, which can directly and indirectly cause negative impacts on health. As a result, its external cost is highest among all three PDP options. Obviously, PDP-Coal is not a healthy option at all.

PDP-Alternative provides the best PDP option for health. It can reduce overall Greenhouse Gas Emission from the existing PDP (PDP-Gas) by 10.5%, but, if we focus on the year 2015, its annual reduction is up to 20.7% (Figure 5). Furthermore, in 2015, it can also reduce NO2, SO2, and TSP from PDP-Gas by 3.57%, 8.85%, and 19.5% respectively. In monetary terms, it can reduce overall external costs (2003-2015) by 230.8 billion THB (7.95%) from PDP-Gas and in 2015 the external cost reduction is equal to 13.6% (Figure 6). This can be expected that the environmental benefits of PDP-Alternative will increasingly show in the longer term.

Figure 5: *Greenhouse Gas Emission in Three PDP Options*

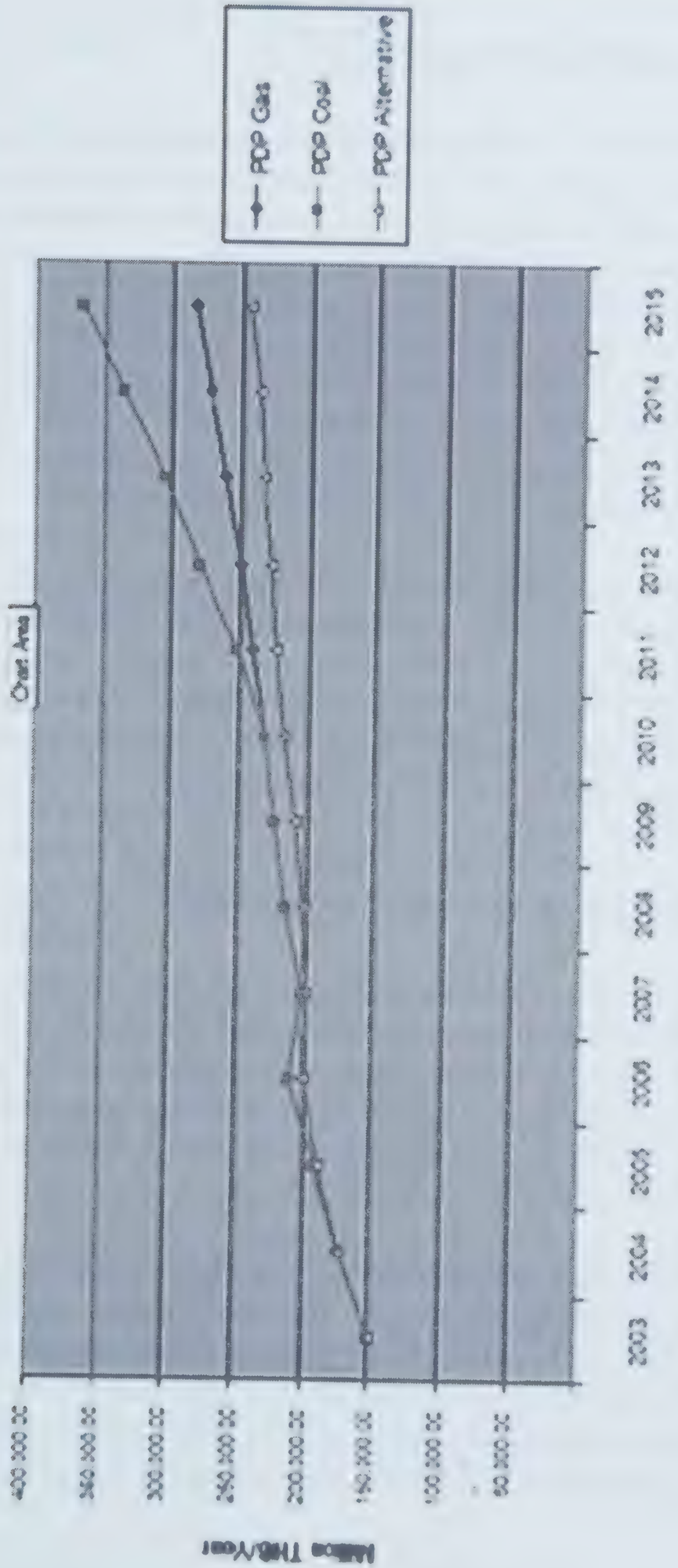

Figure 6: *The Compareision of External Costs from Three PDP Options*

5.3 Socio-political Aspect

Although all three PDP options do not provide any differences in term of concentration ratio, they can lead to completely different picture in term of decentralization and the utilization of domestic renewable resources in the power sector. While both PDP-Gas and PDP-Coal provide so little rooms for decentralized power systems (around 7% of total energy generation) and renewable energy (around 2% of energy generation), PDP-Alternative can expand the share of decentralized power systems up to 22.6% and the share of domestic renewable energy by 9.6% in 2015. This can provide broader opportunity for Thais to actively participate and control over their power system.

At the same time, since its relies on small-scale renewable power generation, PDP-Alternative can also reduce the number of new large project from 27 in both PDP-Gas and PDP-Coal to only 7 projects, which consequently reduces the tension of future social conflicts from power plant projects in several places around Thailand. Thus, from this perspective, PDP-Alternative should be the most preferable choice .

5.4 Achieving Government Targets

Another important aspect for strategic comparison is how these three PDP-options will help Thai power sector to achieve the government target. As mentioned earlier, the two important target for power sector are a) to lower the energy intensity from 1.4:1 (energy generation expansion : GDP growth) to 1:1 and b) to increase the share of renewable energy generation from 0.8% to 6.0% by 2011.

Table 4 shows that neither PDP-Gas nor PDP-Coal can provide satisfactory results in reaching both targets. Both PDP options can lower energy intensity down to 1.1:1 (not 1:1 as planned by Thai government) and increase renewable energy proportion up to 1.26% (not 6% as wished). Only PDP-Alternative can hopefully make the target become the reality, with 1:1 energy intensity and 6.4% renewable energy in 2011.

Items	Government Target	PDP-Gas	PDP-Coal	PDP-Alternative
Assumed GDP Growth (%)		6.5	6.5	5.6
Growth in energy generation (%)		7.1	7.1	5.6
Energy Intensity 2015	1 : 1	1.1 : 1	1.1 : 1	1:1
Renewable Energy Share 2011(%)	6.0	1.95	1.95	6.4

Table 4: *The Comparison of Three PDP Options in Achieving Government Targets*

Source: *Own Calculation*

As a result of reducing energy intensity and increasing renewable energy share, from 2010 the rate of Greenhouse gas emissions will start to decline, especially when compare with economic growth, as presented in Figure 7. This can be considered as the starting point for de-linking process between economic growth and Greenhouse gas emission. Hopefully, this can be a good sign for Thai power sector in moving towards more sustainable development.

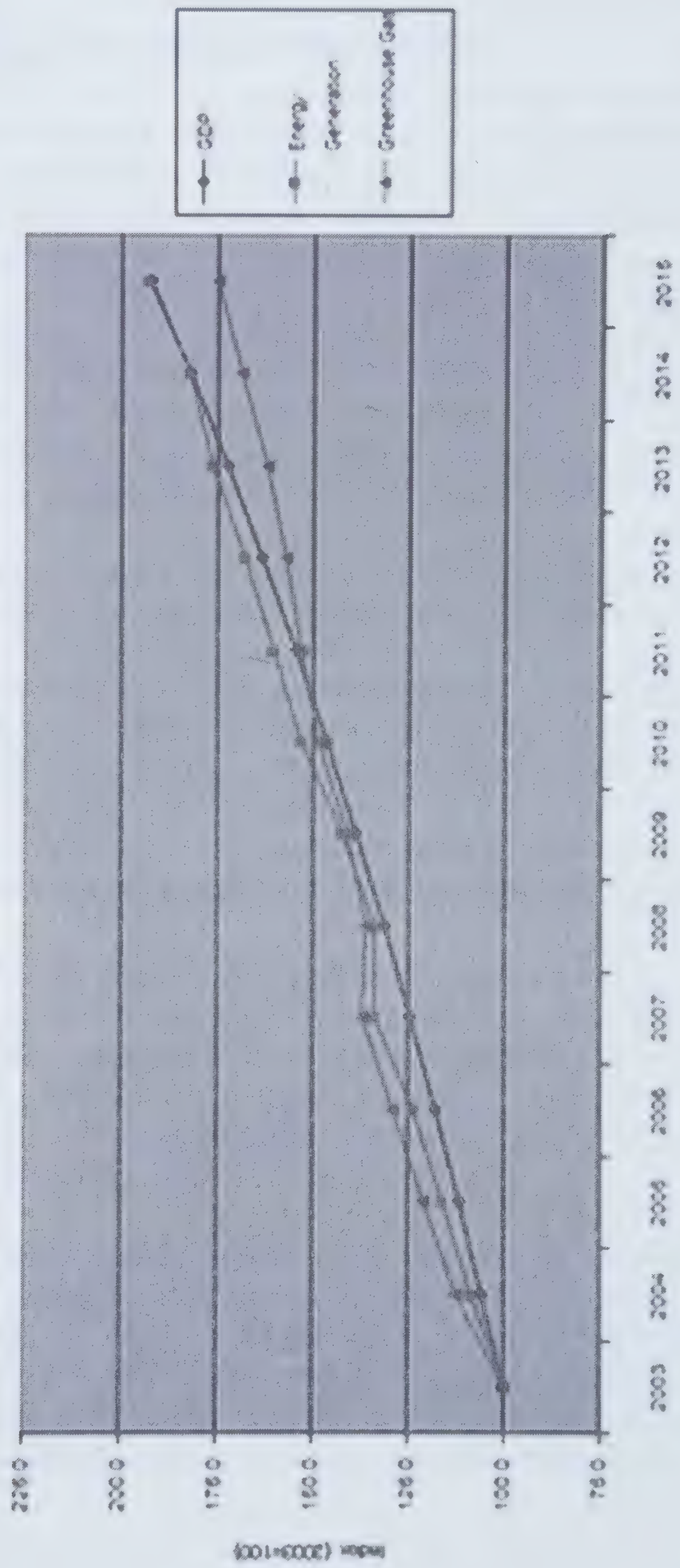

Figure 7: *Index of GDP, Energy Generation and Greenhouse Gas Emission*

6. Public Discussions

These strategic results together with the relevant experiences on sustainable energy development at regional and local levels have been presented to stimulate public discussions about strategic directions of Thai power sector. These following points are the short summary of what have been publicly discussed and concerned during this HIA study.

* Thai people **are fully aware of environmental and health consequences** from power generation including new power plant projects, therefore, they are interested in learning and discussing about alternatives.

* The **sustainable energy trip** is very useful in bridging the more abstract strategic choices at the national level and the **actual potential and reference cases at the regional and local levels**, and thus, stimulating more insightful public discussions.

* Another important benefit for PDP-Alternative in local people viewpoint, which have not been included in the calculation, is **adding value for their agricultural by-products and wastes**.

* In general, the **PDP-Alternative is highly welcome**, mainly due to its economic and environmental health benefits. The PDP-Coal is much less attractive for local people due to its limited local economic benefits and its negative environmental and health consequences.

* Although, in general, renewable energy provides significant benefits on health, but in practice, several renewable projects have also hurt local environment and people's health. Thus, the **health protection mechanism** with appropriate public participation process is certainly required, even in the case of distributed renewable energy power plant project.

* In some places, local people are highly interested and **active in developing their own local and regional energy plan** in order to reach its own potentials for sustainable energy development with good governance structure. This can be a very good opportu-

nity to implant the concepts of sustainable energy planning and healthy public policy deeply into Thai society.

* To support PDP-Alternative, the **new policy mechanism and institutional arrangement** are also needed. However, the public discussion on this issue does not seem fruitful due to its technical complications. Perhaps, it can be perceived as the main area of policy-oriented learning in the near future.

* Although several public seminars and sustainable energy trips have been reported in public media, it is still far from being effective in terms of actual policy influence. **Better focusing on policy process and policy window as well as more creative policy communication** are highly recommended.

7. Policy Implications

From these strategic results and public discussions, it is quite clear that PDP-Alternative is more preferable. PDP-Alternative can reduce economic burdens for Thai economy, lower Greenhouse gas emissions and pollutants, provide more rooms for people to participate actively in Thai power sector and reduce social tensions and conflicts. These can lead to better health for Thai people in both direct and indirect ways. Therefore, PDP-Alternative should be recognized as an initial step for developing "better power for health" in Thailand.

However, it is not an easy task to move from this strategic HIA to the real actions. This is because the structure of Thai power system is highly centralized and locked into large-scale fossil-fueled based technologies[11] as seen in PDP-Gas and PDP-Coal. At the same time, it is also essential for Thai society to understand, and be able to access to and control over pathways of renewable energy development to ensure positive impacts on health and equal distribution of its benefits within the society. Perhaps, moving from assessment to action is much more challenging than conducting assessment itself. Basically, it requires further development in four main areas as followed;

1. Policy mechanism is needed to provide the rooms and the rules for small-scale renewable energy projects to enter, operate, and expand in Thai centralized power system. This policy mechanism includes a) fairly access to the national electricity grid, b) favorable pricing systems with the consideration of positive and negative impacts on health and environment, c) supportive institutions and market access for newly developed technologies and d) effectiveness of independent regulatory body in ensuring good governance in power sector[12].

2. Environmental protection. Although renewable energy, in general, produces much less pollutants, its operation can affect local people health, as seen in some biomass power plants in Thailand[13]. Therefore, environmental protection is still required to ensure human health benefits from proposed renewable energy development. Due to its proximity with local communities, effective public participation process both before and during the implementation should be at the heart of the environmental protection mechanism[14].

3. Public Deliberation is important for realizing of potentials and benefits of domestic renewable resources, which is essential both for project development at local level and policy influences at the national level. Concurrently, public deliberation is also essential for the establishment of effective policy mechanism and environmental protection to ensure equitable share of local benefits as mentioned above. In this study, public deliberations have been conducted through a) sustainable energy trips b) exhibitions and public seminars at regional level, and c) public communication through mass medias. However, more effective and broader public communication and policy-oriented learning is still required at all levels for policy influences and supportive institutional development.

4. Policy Influence is crucial for policy direction change and, subsequently, the changes in policy regulations and the power structure, which are pre-requisites for the successful implementation of PDP-Alternative. Presently, in the period of oil price rising, Thai government has paid more attention to the petroleum sector than power sector. The only concern for Thai government in these recent years is the privatization of Thai power sector with more centralized control. Therefore, the effective policy influence strategy is highly and urgently required. This strategy may include the communication with

the government officials that their existing PDP cannot help them reach their own targets. Moreover, it may lead to more expectable social conflicts in several places around Thailand. What we need is something much more progressive, such as PDP-alternative. It is also essential to convince the government that, when combines more expensive renewable energy investment with cheaper demand side management and realistic demand forecasting, PDP alternative can provide both lower economic burdens and higher environmental quality for Thai society. However, all these messages still need policy windows in order to urge for serious public discussion and dramatic policy changes.

8. Health as an Engine for Sustainable Energy

This strategic HIA may be a good starting exercise for integrating health into energy planning. Instead of focusing on mortality and morbidity as usual, this assessment applies more holistic view on health and sustainable development. Conceptually, power sector can provide both good and bad supportive environments for health. From the assessment, it is highly possible for Thai society to have an alternative way of supplying power with less economic burdens and better health gains.

However, "the better power for health" cannot be achieved from this technical calculation. It requires public deliberations and political supports in order to move from plan to practice. Therefore, the question is moved from how power sector affect health to how health perspective can lead to better policy process and healthier solutions in Thai power sector. As stressed in the Ottawa charter, "health promotion is the process of enabling people to increase control over, and to improve, their health"[15]. Perhaps, just like other cases, the answer will be much clearer when we reorient our "better power for health" to "people's power" themselves rather than power sector as we do in this paper.

Item	unit	Power Technology													Import	
		Lignite	Coal	Oil	Diesel	Gas	Co-gen.	Biomass	Biogas	PV	Hydro -hydro	Micro	Wind	DSM	Laos	Malaysia
Investment cost	Mil. THB /MW	45.00	42.00	27.00	55.00	25.00	36.00	42.27	48.00	190.43	23.15	61.83	50.00	5.00	-	-
Import Content	%	60	70	70	60	70	70	50	30	50	70	40	50	50	-	-
Fuel Cost	THB/kWh	0.57	0.72	1.84	3.49	1.36	1.25	0.55	0.00	0.00	0.00	0.00	0.00	0.00	1.65	1.60
Import Content	%	20	90	80	80	70	70	20	-	-	-	-	-	-	100	100
O & M Cost	THB/kWh	0.11	0.15	0.12	1.83	0.12	0.12	0.30	0.15	0.03	0.13	0.15	0.65	0.50	-	-
Import Content	%	15	15	15	15	15	15	15	15	15	15	15	15	15	-	-
Greenhouse gas Emission	g. of CO2 eq./ kWh	1,008	796	690	650	471	314	37	20	30	50	-	11	-	50	471
NO2 Emission	g/kWh	2.986	2.986	0.560	0.105	0.251	0.166	0.654	0.251	0.008	0.000	0.000	0.000	0.000	-	-
SO2 Emission	g/kWh	4.457	2.971	1.047	0.369	0.336	0.221	0.154	0.336	0.023	0.000	0.000	0.000	0.000	-	-
TSP Emission	g/kWh	1.626	1.626	0.305	0.057	1.176	0.776	0.512	1.176	0.017	0.000	0.000	0.000	0.000	-	-
External Cost	THB/kWh	4.04	2.76	2.67	2.67	0.79	0.53	0.63	0.00	0.05	0.39	0.03	0.14	0.00	0.40	0.31

Appendix 1: *Coefficients for Each Power Technology and Import in Strategic HIA*

Source:

(1) Investment cost: From EGAT, Power Development Plan 2004 (July Edition) and the Energy for Environment Foundation, 2003. Supportive Approach for Wind and Solar Power Generation.

(2) Investment Import Content: Own Assumption

(3) Fuel Cost: Adapted from EGAT. 2003. Power Generation Cost, the Energy for Environment Foundation, 2003. Supportive Approach for Wind and Solar Power Generation and Own Calculation.

(4) Fuel Cost Import Content: Own Assumption

(5) O & M Cost: Adapted from EGAT. 2003. Power Generation Cost, the Energy for Environment Foundation, 2003. Supportive Approach for Wind and Solar Power Generation and Own Calculation.
(6) O & M Cost Import Content: Own Assumption

(7) Greenhouse Gas Emission: Holdren, J.P., and Smith K.R., 2000. "Chapter 3 Energy, the Environment, and Health" in World Energy Assessment, Energy and Challenging of Sustainability. UNDP.

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(9) External Cost: the Energy for Environment Foundation, 2003. Supportive Approach for Wind and Solar Power Generation and Own Calculation.

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Roles of Health Impact Assessment and Potash Mining Project, Thailand

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1. Abstract

Thai people and the environment have been suffering due to development projects for a long time. "Health Impact Assessment" is one of social innovations that can prevent and mitigate such problems.

The Potash Mining Project in Udon Thani Province: High quality potash deposits have been discovered in Udon Thani since 1981. The Asia Pacific Potash Corporation (APPC) has planned to invest around $US 645 millions on the mine. A 170-hectare plot of land has been purchased for the buildings of the plant. Expectedly, 5 millions of the remnants of Potash salts will be carried back into the underground and take around 22 years to finish. A numbers of meetings and public hearings have been organized by the protesters. Pitfalls in the EIA report and unfair agreement in the contract were the major arguments. People in the mining areas have been separated into two opposite sides.

Roles of Health Impact Assessment: The HIA working group of the Health Systems Research Institute has joined the Udon Thani working group to organize a seminar on "The Application of Health Impact Assessment Process" on 17-18 May 2003. There were around 500 participants. The seminar processes consisted of lectures from academics, APPC, Human Right Committee and small-group brainstorming sessions to listen to voices of health concerns among participants. Afterwards, the Minister of Natural Resources and Environment has directed his staff to study the seminar documents. On 3 June 2003, the committee of experts in environment reconsidering the EIA report has concluded that the EIA report has a numbers of major mistakes and was not suitable for the permission process. Seminars and public hearings in communities both rural and urban have still been organized regularly. Bringing "Health Values" to the debates about development is strongly beneficial. The approach can be leading to sustainable development.

Keywords: Health Impact Assessment, Potash, Mining, Thailand

2. Context

- **The Udon Thani potash concession**

High quality potash deposits have been discovered in Udon Thani Thailand since 1981 and have been described as the "world-class potash resource" due to "the high-grade, shallow depth" and "one of the lowest-cost producers industry." The deposits cover an area of 2500 hectares (ha). The area contains roughly 225 million tones of Sylvie ore. This is among the highest grades potash industry.[1]

Asia Pacific Potash Corporation (APPC), 90% owned by Asia Pacific Resources Ltd (APR) based in Vancouver Canada and 10% owned by the Thai Government, holds a 85,000 hectares (ha) exploration and mining concession in Udon Thani province [1] (Figure 1).

Figure 1: *Map of Location of Udon Thani Province, Thailand*

APPC has formed a strategic alliance with United Infrastructure Company International Ltd. (UIC) and Norsk Hydro Asia Ltd., the world's largest finished fertilizer producer. Crew Development Corporation is a major shareholder of APR (and thus it is APPC), and Bechtel Enterprises Holdings is the whole owner of UIC. The finance of project will be arranged by the HypoVereinsbank International Finance Corporation (a member of World Bank). Crew and Bechtel have ever been criticized for their mining operations in the Philippines and Bolivia, respectively.[2]

In 1998, a feasibility study has been completed by APPC. The deposits are expected to have 25-30 year life production and 2.0 million tones of potash per year (APR expects mine slower rate). It has been estimated that cost per tone will be less than US$ 50, F.O.B. Gulf of Thailand, including sales costs, royalties, mining taxes, rail transports, port and ship loadings. Potash is currently (2003) sold at approximately US$120 per metric tones F.O.B Vancouver, of which shipping costs of Asian markets must be added. Therefore it is estimated that APPC can make a total income of 6 billions from the mine. APPC will be the first major potash mine in Asia. [2]

Potash refers to a group of potassium mineral salts used in the production of agricultural fertilizers. An estimated need of fertilizer in local market is 13 million tones per year and the grow rate is 4-6% per year. [2]

APPC has planned to invest around US$ 645 millions on the mine. It has purchased approximately 170 ha of land on which processing and tailings storage will take place, but it will mine a total area of 2,500 ha beneath residential areas, farmland, a national highway and railway linking Bangkok with Nong Khai (at the border to Laos PDR) and military installations [3] (Figure 3).

The company plans to mine a thin layer of potash salt located 350 m below the surface, roughly one-third height of the major potash mines in Saskatchewan Canada where potash mines operate with depths of more than 1 km underground. [4]

More than 90% of the potash product will be sold to fertilizer manufacturers, the rest will be used as raw materials for detergent, soap, glass, synthetic rubber, ceramic and weapon industries. Expectedly, 5 millions of the potash wastes will be carried back into the underground. It will take around 22 years to finish the process. [1]

APPC holds a number of exploration licenses under the overall concession agreement with the Thai government. However, the company has not received mining lease under the current Minerals Act of Thailand.

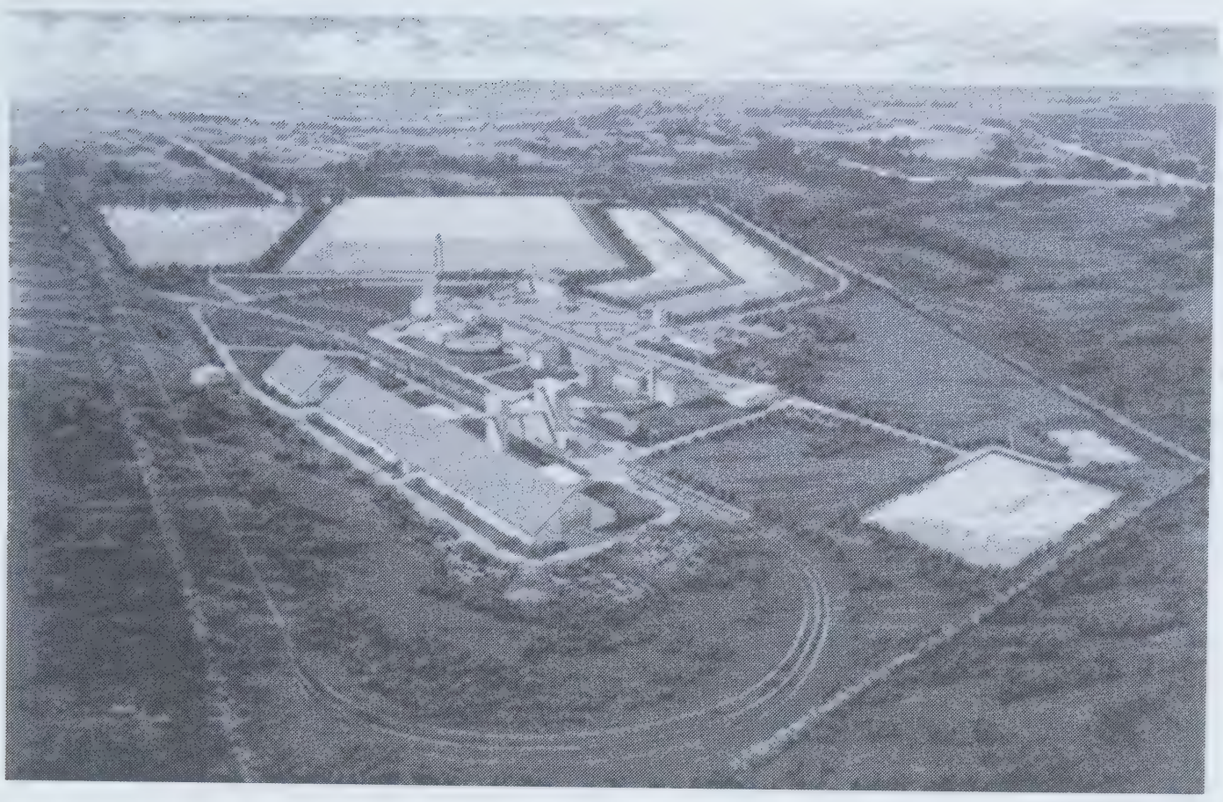


Figure 2: *The Model of Potash Mining Project by Asia Pacific Potash Corporation*

- **Local opposition**

There are significant oppositions to the project by local communities who fear widespread subsidence, salt contamination of agricultural land and groundwater contamination. People were afraid of the impacts of the mine which will affect their people, their children and grandchildren. They were also afraid of their agricultural based livelihood will be destroyed [4] (Figure 3).

The first individual protests against potash mine planned in Udon Thani occurred during the APPC exploration survey period beginning in 1993. Since then local opposition to the mine has gained considerable momentum with currently over 1000 people in 21 villages within concession area,

The protesters marched rallies to provincial hall, local temples and Bangkok front Parliament house. The villagers traveled to Bangkok to submit petitions to the Canadian Embassy requesting that the Canadian company should be instructed to follow the same social and environmental standards as required in Canada. [4]

The company did not pay compensation for the damages i.e. salinity of agricultural soils, caused by the exploration activities so that community people cannot believe the company will solve any problems that will occur as a result of mining activities.

Public consultation and participation were lacking. During exploration stage neither company nor government informed villagers about drilling activity nor gave information about the type of mine to be built. They only talked about how rich people would become and about increased job opportunities.

Figure 3: *Social, Environmental and Human Health Concerns raised in the Local Protest against the Potash Mining Project*

In response to complete lack of public consultation about the basic project plans, local communities concerned about potential social environmental impacts of the potash mine have established Udon Thani Environmental Conservation Group in 2001. The group has since worked to disseminate information about the project to the surrounding villages. By means of regular walking tour to over 45 villages. The villagers have then been informed about the project and its potential impacts.[4]

Other public sectors were gradually participating in the movements. National environmental groups, media, academicians, research institutes, independent senators and members of the Human Right Commission then paid more attentions to the problem and provided some supports. The villagers therefore have greater access to technical documents related to the project plans.

A numbers of seminars, meetings, public hearings have been organized by the protesters and allies. The group has submitted letters to related government officials and the prime minister. Pitfalls in the EIA report and unfair agreement in the mining contract were the major arguments.

The chief governor of Udon Thani has then appointed a working group to investigate the problem. The work force has held a number of meetings and public hearing sessions.

The Minister of Natural Resources and Environment responded by setting up a six –member committee of environmental experts and government officials to re-evaluate the EIA report previously approved by the concerned authority.[5]

- **The faulty EIA of the project**

The Environmental Impact Assessment (EIA) for the project has been heavily criticized.[2,4,6-8] The EIA predicts a subsidence of more than 70 centimetres (cm) resulting in depressions in the land surface over the entire 2,500 ha area affected by the mine. Further subsidence following mine closure after 22 years is expected but the EIA does not predict how much. An independent geologist from Rangsit University Bangkok informed that geology above the salt deposits of the Northeast of Thailand is predomi-

nantly claystone or soft rock which is not stable therefore subsidence can be great.

In addition to structural damage to homes and infrastructure, it is likely to disrupt groundwater quality and flow and drastically alter natural drainage patterns, sending streams off course and potentially creating water logging and flooding problems.

Moreover, local communities anticipate severe salt contamination of agricultural land and water resources as the mined mineral is composed predominantly of rock salt (sodium chloride).

The pure potash product will have to be extracted on site, leaving the rock salt, chemicals and other waste to be stored at the surface until further reprocessing. Salt dust will be continually emitted from an exhaust stack during extraction and mineral processing, eventually settling on adjacent farmland, destroying crops and degrading soil.

The salt waste, however, is the primary concern of village people. 20 millions tones of salt waste will be stored at the surface in a 40m high tailings pile that is to remain uncovered and exposed to wind and rainfall.

As rainfall dissolves this salt it will flow into a brine pond and inevitably leak into the soil beneath. As it seeps into the ground it will enter and contaminate the thin and fragile layer of fresh groundwater that local communities rely on for domestic water supply.

In the case of unusually heavy rains or large floods, there is a high risk that dikes designed to contain the tailings area will be breached and 20 million tones of salt will be released into the environment causing devastation for rice farmers, destroying forests and polluting lakes, reservoirs and rivers.

Geological engineers have deemed the EIA for the mining project insufficient in many ways. The following points detail the main problems with the EIA[3]:

1. The EIA is not a valid document in terms of the mining law. Controversial issues of public participation, liability for property damage, and the burden of proof.

Property damage in the form of extended subsidence cracks or increased salinity levels from salt dust fallout or groundwater contamination is likely to occur. However, a baseline soil salinity survey has not been carried out on or off the concession area and it will therefore be extremely difficult to prove that increased soil salinity, for example, was caused by the mining activity. The soils in the region already contain a certain level of salinity, making it even more difficult in the future to prove that the mining activity was the direct cause. In order to demonstrate the direct relationship between property damage and mining activity, a geological survey must be done. This burden should definitely not be held by the landowner.

2. The EIA is ambiguous in its assessment of the location of potential environmental impacts. It does not specify whether the information being presented relates to the 2500 hectare (ha) concession area or to the 170 ha mine site area. The mine site is the parcel of land owned by APPC and is where the mine shaft, processing plant, tailings pile, and brine pond will be located.

3. The EIA did not assess such integral measures as current soil salinity or risks of flooding and salt contamination. Moreover, it did not prepare a modeling of salt dust fallout from processing plant emissions. Instead it claims that the fallout will be evenly distributed throughout a 9 km2 area. The EIA obviously fails to account for predominant wind patterns that would concentrate the fallout into a lesser total area of farmland. These assessments are basic requirements under the mining laws held in Saskatchewan, Canada.[6]

- **Protesters were fought back**

The protester groups were fought back in a numbers of ways. While the protests remain peaceful, the government officials and local district heads have threatened several local community members. Conflict within community was growing rapidly.

A group of pro-potash mine has been supported to set up movements for the mine. Several local influential businessmen are being awarded construction contracts. The company returned gathering supports for the mine from other villages. People in the mining areas were separated into two opposite sides.

- **Changing Thailand's Minerals Act**

Thailand has had negative experiences with deep underground mining therefore Thailand's Minerals Act did not provide conditions for the approval of underground mining. Under section 48 of the Thai Constitution, property rights (surface and sub-surface) are guaranteed only for the state. If the state wishes to build roads, railways, other public utilities, it has to purchase land and pay compensation. [3-4]

APPC first seek permission for the mine to be operated underground. Since 1997, Department Mineral Resources (DMR) has at least five times submitted a Bill to the cabinet to amend the Minerals Resources Act. The amendment would provide APPC with favorable permitting conditions for its proposed mine. It will allow underground mining without permission of and compensation for the landholders above proposed mine.

The new Minerals Bill represents a government effort to create the structural conditions for further large-scale transnational mining activities in other parts of Thailand while ignoring the right of local communities to be involved in the management of natural resources as awarded under the constitution.

Furthermore, the government continues to ignore its obligation under the constitution to establish an Independent Environmental Monitor-

ing body that would create the means for proper evaluation and monitoring of such mining projects and hence protection of environmental quality and local livelihoods.

The Bill was rejected each time for its unconstitutional and unsatisfactory in terms of public participation and the protection of private property rights.

In October 2001 the Senate amended bill, requiring mining concessionaires seek landowners' permission before proceeding with mining activities on their land. These amendments caused controversy and prompted the formation of joint House-Senate committee on 19 October 2001 to scrutinize the legislation.[4]

The committee has made significant amendments. The legislation will require greater degree of public participation and protection of property rights. The bill will potentially allow local communities to request funding in carrying out an independent investigation into environmental, social and health impacts especially for mining projects where deemed original Environmental Impact Assessment (EIA) report insufficient and considerable risk of environment and livelihoods can be demonstrated. However, the discretion to allow such additional studies to be conducted lies with the government, not an independent environmental monitoring body.

There were strong oppositions against the amendment of Minerals Act. The National Human Rights Commission of Thailand, local communities and independent senators want to reject the amendment bill that would allow such mining operations to go ahead. A number of independent senators plan to file a case with the constitutional court if it becomes law, arguing that it violates landholder property rights under section 48 of Thailand's Constitution.

On 8 May 2002 National Human Rights Commission (NHRC) organised public hearing on the Minerals Bill. Members NHRC sub-committee, independent academics, NGOs, local community members, representatives of Thai Military based near mining area in Udon Thani attended the meeting. As a result the meeting concluded that if the new law were passed the parliament, the NHRC and Lawyers Association would appeal ombudsman and send the case to the Constitutional Court.[2]

The House of Representatives passed amended version of the Bill on 21 August 2002. Although a number of amendments of the original Minerals Bill will favour community rights, public participation provisions are still very weak. The Bill, in essence, continues to contradict Thailand's Constitution in terms of landowner rights. [4]

Under Thailand Constitution, community rights are respected in terms of managing natural resources. But the bill allows government to grant concessions to private companies to operate underground mining of over 50 meters depth without requiring permission of community.

On August 23, 2002, a petition was signed by seventy-seven Senators. The file requested the Constitutional Court to assess whether the new Minerals Resources Bill contradicts the charter. It is believed that the Bill was pushed forward specifically for the potash deposit mining in Udon Thani, yet under the Constitution a law cannot be passed when relates to only one specific situation. If the court accepts the petition it will put legislation on hold at least 3 months. [4]

- **Constitutional court decision**

Finally, the Constitutional Court has concluded that the amended law does not violate the Constitution. Even though the Constitution Court rules in favour of the Bill, APPC will have to start its approval process again, it must provide public hearing and community can be given funds to carry out an independent EIA. [4]

- **APPC movements**

Media coverage on supports of the mine by some members of parliament and some senators were respectively released. Media people were supported a study tour abroad to visit a coal mine in Australia, (instead of a potash mine in Canada !).

APPC has applied for the Mining Lease. This lease is the final appli-

cation step for the potash mine project and the decision on the lease lies with the Ministry of Industry. It seemed like the protesters will lose the fight. They were being convinced that the license for Udon Thani potash mine will eventually be endorsed by the government.

- **Hundreds of villagers visit the Ministry of Industry**

On 28 April 2003, around 800 villagers from the Udon Thani Environmental Conservation Group gathered in Bangkok to voice their concerns to the Ministry of Industry. Throughout the day, various local community members took turns addressing the potential environmental and social dangers of the mine on an open stage.[9]

Eventually, Ministry of Industry officials invited village leaders and non-governmental organizations to sit down for negotiations to produce an agreement towards two central points i.e. resolving the project's ownership, and its environmental impact assessment (EIA).

The Ministry promised to organize a special committee to review the legality of the exploration contract signed between APPC and the government. This review committee will appoint representatives from both the Conservation Group and the government.

The Udon Thani Environmental Conservation Group expressed satisfaction in their dialogue with the government and returned home to their 24 villagers throughout Udon Thani province.

3. The Roles of Health Impact Assessment (HIA)

HIA in Thailand is quite new, but it has been gaining more and more public interests. Reviews of international experiences and pilot HIA projected have been commissioned by the Health Systems Research Institute (HSRI). A group of academicians from various disciplines in 6 – 7 universities nationwide were invited to participate in the development of HIA in Thailand. Networks of HIA research groups were organized and additional research staffs were also recruited to facilitate HIA research projects.

The HIA working group has joined the Udon Thani working group to organize a two-day public seminar on "Potash Mining Project and the Application of Health Impact Assessment Process in Thailand" on 17-18 May 2003 in Udon Thani. [10]

There were around 500 participants from various groups for example state officials, community villagers, monks, politicians, the APPC company staff, health officials, school teachers and students, veterans, senior groups, academic experts, National Human Right Commission representatives, provincial commerce association staff etc.

The seminar processes included:

1) Presentations on recent project progress and opinions of concerned stakeholders e.g. representatives of APPC, academicians, National Human Rights Commission representatives, provincial commerce association, and villagers.
2) A presentation of historical development, concepts, principles and procedures of HIA by the HIA working group.
3) A presentation of proposed HIA model for the Udon Thani potash mining project by the HIA working group.
4) A video presentation of previous piloted HIA project
5) Small-group brainstorming sessions to listen to voices of health concerns among participants.
6) The last session was "press conference" where the results of the seminar had been announced urging the needs for a comprehensive "Health Impact Assessment" by independent agency.

• Concepts and principles of HIA

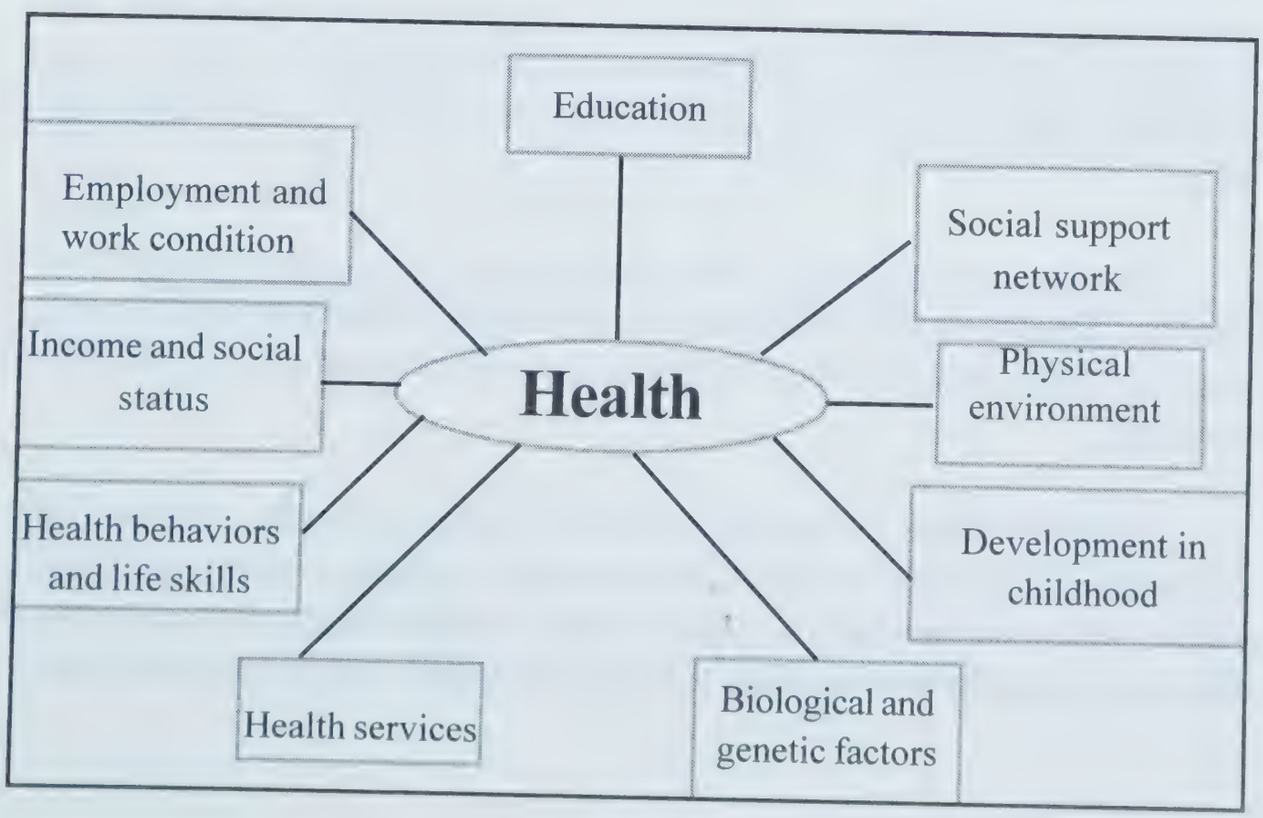
HIA is quite new to the public as well as the participants in the seminar. The concepts and principles of HIA were presented and the following points were stressed.[11]

1) The significant of "Health Values" in public policy
2) The importance of systematically collected evidences on potential health impacts
3) The crucial roles of all stakeholders as dispensable resources for the development policy

• Proposed HIA model for the potash mining

The HIA group presented a proposed HIA model to the participants and then followed by opened discussions.

The proposed HIA model for the potash mining in Udon Thani was based on the framework of the 9 groups of health determinants developed by the Canadian Environmental Health.[12] The framework of health determinants was shown below:



The framework was intentionally proposed because the owner of the mine project was based in Canada and positive experiences of implementing it were gained in a HIA pilot study.

The framework provides holistic and social views on health issues. It was used to exemplify how health impacts of a proposed project can be assessed.

- **Social and health issues raised in the seminar**

Serious concern has been expressed regarding the potential social and health impacts of the mining project.[10]

In terms of social impacts, the level of financial investment surrounding the mine project will cause further socioeconomic change in the Udon Thani town. This may affect patterns of employment, migration, housing, transportation, private investment, and tourism.

The issues of health risks associated with the development of the potash mine were raised. The lack of health risk assessment and no public safety nets will be put in place in order to prevent and manage these risks.

Potential health problems include physical conditions linked directly to mining activities such as respiratory disease but also encompass emotional and psychological conditions, stress, suicide and crime related injury and death, which result from social change and conflict within communities.

Health impacts arising from a loss of livelihood and degraded environment are also critical to evaluate. Furthermore, impacts on sexual health, particularly the incidence HIV/AIDS, in the wider community are of serious concern.

A labour force of over 800 workers, many temporary, coming from outside provinces or abroad will have a major influence on prostitution in nearby urban centres such as Udon Thani. In addition, no risk assessment for health impacts arising from accidents and spills has been carried out.

The capacity of the community and local health services to cope with such potential health impacts is doubted given that no base line health data has been collected, no health monitoring process is planned nor steps taken to evaluate and eliminate risk.

The extent of health impact assessment carried out in this potash mining proposal has been limited to only the collection of hospital patient figures in Udon Thani.

- **Comprehensive HIA**

As a result of the seminar in May 2003, the Department of Health and the Health Systems Research Institute have co-financed a comprehensive HIA study for the potash mine.[13-14]

The HIA study commenced in July 2003. Consultant firms or economic researchers were not hired to conduct the study. Instead, stakeholders such as state officials, community villagers, monks, politicians, the APPC company staff, health officials as well as academic experts would be invited to conduct the study together.

The scope of health impact focuses not only on physical health but also mental health and the livelihood of the people in the community.

The HIA report on this project will be submitted to the government as supplementary information for it to make decisions regarding the project's future. It is the first time the government will have a health impact study as a guideline for making a decision on a project.

The HIA report would be a unique experience and a true learning process.

4. Government Response

Afterwards, the Minister of Natural Resources and Environment has directed his staff to study the seminar documents.

A six-person committee of academics and government official was set up to review the previous EIA, which opponents feel does not accurately assess issues of salinisation of rice fields, subsidence, and a plan of compensation in case of accidents.

On 3 June 2003, the Committee concluded that the old EIA was found to be incomplete on 26 different points. The Committee made recommendations that APPC be required to submit a new improved EIA before any advancement of the mining project is allowed. The Minister of Natural Resources and Environment then sent a letter to the Ministry of Industry informing that the grant of mine license should not be issued.

The Ministry of Industry had previously agreed to fully consider the findings of the Committee and promised not to grant APPC a mining lease if flaws in the EIA were found. But there was skeptical as the Committee's findings have "no legal binding".

The Ministry of Industry therefore requested the Council of State - the government's legal arm- to make the decision whether the Committee's recommendations are legal. Finally the Council of State has ruled that the Canada-based mining company, awaiting a licence to mine potash in Udon Thani, needs to re-conduct its environmental impact assessment (EIA) as its current version is not applicable under the new Minerals Act.[15]

Its current EIA, which contains plans to mitigate adverse impact caused by underground mining activities, was conducted under the old Minerals Act, which did not allow for underground mines. The council basically ruled that since the EIA was done under the old law, it needed to insert updated information to comply with the amended Minerals Act. The law was amended to cover that and the amendment came into effect in January 2004.

5. Conflict Resolution in Community

In the process of the comprehensive HIA, seminars and meetings in communities both rural and urban have been organized regularly. A member of the pro-mine group have lately confessed their misunderstandings and now participated in the protest against the mine.

On 29 June 2003, hundreds of local community members from the Udon Thani Environmental Conservation Group marched in Udon Thani City to protest a proposed potash-mining project. Around 700 villagers marched from the train station to Toong Se Muang government monument where they rallied and were joined by hundreds of urban supporters. Attendance reached 1,000 as groups of local high school and university students came in large numbers in the afternoon.[16]

There was a lot of cooperation between villagers and city people. It was a great opportunity for people in the city, who won't be directly affected by the mine, to show their support for the local community's struggle.

The march and rally were in response to APPC's application for a mining lease, the last step before construction of mining infrastructure.

APPC submitted the application to the Ministry of Industry at the end of May, but will need to hold public hearings before the Ministry can make a decision on whether to grant the lease.

While villagers marched, youth walked alongside and handed out information about the villager struggle, including information about the project's Environmental Impact Assessment (EIA). The EIA has long been a focus of the Conservation Group opposing the project and concerned government officials and academics.

6. Disscussion and Conclusion

This report has provided details of the latest developments and issues relating to the potash mine in Udon Thani, Thailand as well as the experience of HIA applications being used as a social tool for conflict resolution.

The concepts and principles of HIA introduced in the two-day seminar were greatly welcomed by the participants.

Subsequent HIA processes revealed that bringing "Health Values" to the debates about the development project is strongly beneficial. The approach can be leading to sustainable development.

Problems of underground potash mining in Udon Thani, northeastern part of Thailand is an example which HIA could be involved as a part of conflict management tool.

Udon Thani potash mining project is an extremely large project, it faces increasing problems caused by fear among local villagers that underground potash deposits would contaminate surface and underground water resources with salinity and may negatively affect their livelihood and finally affect the country as a whole.

We used HIA to promote agreement and understanding of the potash mining project in Udon Thani as well as to disseminate facts and information about the project to the public and the media. The comprehensive HIA study are performing and will be completed within at least three months by the team that comprises of various stakeholders such as provincial officers, community villagers and academic experts.

Listening, encouraging open discussion and keeping everyone focused on the present situation – not only the negative impact but also the positive side – are some of the best ways to move everyone's mindset openly and honestly with each other.

7. Future Development

Further efforts should be focused on international cooperation to push the international legal standards of corporate codes of conduct and extraterritorial operation to ensure that foreign companies operate to the highest international environmental and social standards. This can be eliminating the practice of exploiting often-weaker laws in developing countries.

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Analysis of the Public Policy Process on the Agricultural Pesticide in Thailand

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1. Pesticide Situations in Thai society

The use of agricultural pesticides has been introduced to Thai society since the starting of the 1st National Economic and Social Development Plan in 1961. Since then, pesticides have been increasingly used by Thai farmers throughout the country. In term of pesticide import, the amount was equal to 9,906 tons in 1966 (Jutamart, 2003), which was the last year of the first Plan, then it increased to 79,837 tons in 2003 (Parinya, 2005). At present, Thailand is one of the major pesticide users in Southeast Asia.

Concerning the pesticide problems in Thai society, most of the government authorities and academics tend to believe that the main cause is the inappropriate pesticide use of farmers, such as mixing various kinds of pesticide, over use more than the instructions in the labels, wear unsuitable protective gears when spraying pesticides, etc. These lead to severe impacts in several aspects e.g. health, environment, economic and social.

However, the pesticide problems have gone far beyond the mere explanation of the inappropriate use of farmers. On the one hand, there are many conditions and limitations of Thai farmers to actually use pesticide correctly and safely as recommended. The education level of farmers is generally low as well as the necessary information on pesticide impacts and alternatives are rarely and also hard to access. Furthermore, most farmers

are poor thus they tend to use a lot of pesticides to ensure that their agricultural products are safe from any diseases and pests.

On the other hand, there are many other problems to the effective pesticide management system. The pesticide regulation system is focus mainly on the control of the chemical substances (Department of Agriculture, 2002) but overlooks the demand and supply side management, particularly the pesticide advertisement and sale promotion. Therefore, the core problems of pesticide are not limited to the farmer side only. Actually, the existing law and regulation system is not enough to ensure the effective management.

Last but not least, knowledge use in setting the regulation system and making decisions on pesticide management is mainly confined to scientific data, which have limitations, especially on the chronic health consequences as well as social impacts.

Importantly, to address the pesticide problems more effectively, it cannot depend only on the role and responsibility of the pesticide regulators. In fact the influences from pesticide companies and other key actors to the policy direction of pesticide use are important for leading to healthy public policy on pesticide issue.

Therefore, the analysis of public policy process is necessary, as it will contribute to a better understanding of the whole picture, the different key actors, the policy directions and advocacy, with the goal to recommend some constructive ways for better public policy process.

This paper will start from the analysis of key actors and their policy networks. Then, the knowledge use in their decision-makings will be analyzed. This will reflect the knowledge gaps of the pesticide issue. Next, the strategies for knowledge link will be proposed with the aims to strengthening the deliberative learning process between the policy networks and improving the direction of pesticide management policy and the regulation system in Thai society.

2. Key actors involved in the pesticide policy process and the Advocacy Coalition Network

Base on the analysis of roles and responsibilities of all key actors related to pesticide issue, they can be categorized into 11 groups, as the following. 1) High-level decision makers 2) the National Committee on Hazardous Substances 3) Agricultural Extension Group 4) Agricultural Pesticide Regulators 5) Impacts Monitoring and Surveillance Group 6) Academics/Experts 7) Farmers 8) Consumers 9) Pesticide businesses 10) Local governments and 11) Sustainable Agriculture Group

Most of the key actors believe that pesticide is necessary for agriculture because it helps to protect pests and disease and hence, increase productivity. Also, there have been no effective alternatives to pesticide. Therefore, safe use of pesticide is the key solution to pesticide problems and impacts.

While the other groups believe in the different way. These parts comprise of Sustainable Agriculture Group and, to a certain extent, Impacts Monitoring and Surveillance Group and some groups of Farmers, and to a small extent, Academics. Their main perception is that pesticide is not necessary since it has severe impacts and there are better alternatives such as various biological or natural substitutions, Integrated Pest Management (IPM), and ecological approaches to pest management.

Consequently, these groups demand 'decrease, pause, and stop' pesticide use. They also advocate for changing the policy direction and improving the regulation system, as well as more effective law enforcement. In addition, there have to be more mechanisms both to control pesticide businesses, and to raise social awareness on pesticide impacts and better alternatives.

From the analysis of the key actors involved in the pesticide policy process, they are diverse in many aspects including different values, believes, perceptions, and roles. However, in the public policy process, many actors always try to network with the like-mind actors in order to support their policy direction. These are called "The Advocacy Coalition Network".

Regarding the pesticide public policy, there are four advocacy coalition networks namely, Sustainable Agriculture Promotion, Decreasing of Pesticide Use Promotion, Safety Food Promotion, and lastly, Pesticide Use Promotion Network.

It is clear that these networks have their own policy direction which are different and often, contrary to the others. Consequently, the present situation of the public policy process on pesticide has led to conflicts and polarization of key actors. Therefore, one main aim of healthy public policy development on pesticide issue is to initiate and facilitate deliberative learning process among these coalition networks and open to the different values, concepts, and approaches of the others.

Accordingly, knowledge will be the key strategic element of the following analysis. The knowledge use by different networks will be explored to identify knowledge gaps, which are one of the vital constraints of the deliberation process. Base on the insights of knowledge use and gaps, knowledge links will be developed as a first step toward constructive dialogue in the public policy process.

3. Knowledge use for decision making on pesticide issue among the advocacy coalition networks

The knowledge utilized by all advocacy coalition networks in pesticide issue is summarized in the below table.

Type of knowledge	Advocacy coalition network	Process to generate or access knowledge	Limitation in knowledge use and condition to access knowledge
1. Knowledge in academic aspect such as the principle of modern agriculture, toxicology, the functions of chemical pesticide	* Pesticide use promotion network	* Knowledge in the textbook * Knowledge transfer is conducted through the curriculum in acadamic institutes *It is widely accepted in the society as explicit knowledge	*Giving importance to principle and theory rather than its application in real environment and social conditions
2. Knowledge as scientific evidences such as the analysis of pesticide contamination in the products and environment	*Safe food promotion network *Pesticide use promotion network	*Scientific lab *Concentrating on standard value set by internatinal/ national organizations	* All actors except experts could not generate, communicate and transfer these knowledge *Reliable knowledge bases on the availlability and effectiveness of technologies which is very expensive
3.Knowledge in economic aspect such as values of exported products, imported pesticide, and returned products with the contaminated pesticide	* Safe food promotion network *Pesticide use promotion network	*Economic calculation	*Some external cost could not be totally calculated into the money system such as the environmental and health cost caused by pesticide use

Type of knowledge	Advocacy coalition network	Process to generate or access knowledge	Limitation in knowledge use and condition to access knowledge
4.Knowledge basing on problem and impact such as health impact, the situation of pesticide use and loophole in legal system	*All advacy coalition network	*Researches with quantitative and qualitative approaches *Systematic observation with synthesizing approach *Intrinsic knowledge arising accumulated experiences	*Lack of organizations to consistently collect and systemize the data leading to inadequate and unclear evidence base especially at the local level *These knowledge is scattered and some are not publicized leading to difficult access by all sectors
5. Knowledge as learning process such as the innovation in biological fertilizers, the ecological relationship in crop field, the crop management basing on the natural harmonization	* Sustainable agriculture promotion network * Decreasing of pesticide use promotion network	* Self learning through observation, innovation and practice	*Answers arise from self-learning and serious practice * Intrinsic knowledge which is difficult for knowledge transfer to the others through formal learning in the classroom
6. Knowledge basing on development philosophy such as sufficiency economy, sustainable agriculture and self reliance philosophy	* Sustainable agriculture promotion network * Decreasing of pesticide use promotion networ	*Intrinsic knowledge arising from experience, practices and the way of thinking * The development of alternative solution which differs from the mainstream solution	* The alternative knowledge goes to the opposite direction of mainstream development leading to few alliances * There is little space for this alternative knowledge especially in the capitalism world with high competition

4. Knowledge gap for pesticide management in Thai society

1) Gap in knowledge base

According to the exploration of knowledge and information related to pesticide in health, environmental and economic dimensions by Duangjai Rungrojcharoenkit (2005), It is found that Thailand is facing many limitations in terms of resources and epistemology to produce all essential information and knowledge. The following is the knowledge gap in health, environment and economic dimension.

- The study on health situation and impact caused by pesticide mostly concentrates on the acute effect of pesticide use. However, without well-organized database linking pesticide issue with health symptoms, the situation of acute effect is underreported. This problem also makes difficulties to the study on the chronic effect.

- The study on pesticide issue in environmental dimension is fewer when compared to knowledge base in health dimension. Most studies are run at the level of surveying on pesticide contamination in the environment. The study on the physical and biological impacts of the contaminated areas are conducted by comparing the results with the standard set by international organizations but the cumulative impacts is ignored.

- The study on the economic impacts caused by pesticide could be run suddenly whenever there are completed data for assessment. Presently, the total cost of pesticide use especially the external cost could not be calculated. The problem of economic assessment is not the availability of economic model but database.

However, the significant problem is not only lack of knowledge but lack of knowledge management is critical point to retard the means in tackling the pesticide problem in Thailand. The results from lack of knowledge and information management generate the following situations;

- Lack of integrated knowledge to point out the linkage of health,

environment and economic in pesticide issue. Under this situation, most of recorded data aims to answer their own aspects and ignores to design their recorded format to meet the requirement of the others. For example, it is difficult to perform health risk assessment if there is no data on the distribution of pesticide known as the critical data in epidemiological study. Without data link, systematic data to support impact assessment is far reaching and it forces us to face the handicapped study in all assessments.

• Underreport is the by–product of lack of integrated knowledge. This phenomenon is always found during the survey of health situation. Most farmers do not link their symptom of disease with the exposure of pesticides as most doctors do. In addition, they are likely to see the doctor whenever their health condition is so serious. This entails under-report of health situation caused by pesticide. It is not good for the study of impact assessment in Thailand because it reduces the importance of impact assessment. In other words, it automatically becomes non-issue in the society.

• No concrete action to deal with pesticide is found at all steps of pesticide control mechanisms because the comprehensive impact assessment is always recognized as a critical key to make them get through all difficulties in decision making. At the same time, how to optimize the existing knowledge to improve their management system is given less concern. This situation would not give the way out to this problem because few comprehensive impact assessments could be successfully carried out due to many limitations as mentioned above. In fact, with knowledge management, some data could become critical information if it is reproduced or link with others.

2) Gap in knowledge needs

The gaps are not found only in the nature of knowledge base but it exists in knowledge needs of decision makers/ coalition networks. Most decision makers reflect only their knowledge need in one dimension which is mostly confined within their own responsibility or value given toward pesticide. Few knowledge needs in the holistic manners is hardly found. Unsurprisingly, the needs in accessing knowledge do mainly respond to

their own question while, the solution for the whole society has never been answered. In addition, the finding which does not serve the mainstream development policy will be not recognized by the others as knowledge. For example, the knowledge constructed by Sustainable Agriculture Promotion Network is not accepted by Pesticide Use Promotion Network.

Knowledge needs of each coalition network could be different due to the following reasons;

- The needs are mostly confined within responsibility and function of each network on pesticide issue.

- The needs are mostly reflected in one dimension not in holistic manners.

- The needs deriving from the deliberative discussion among all networks is rarely found.

- Some needs are raised without concerns on the limitation of knowledge construction.

This situation gives more difficulties in fulfilling the gaps of knowledge base. Prioritization of information to fulfill knowledge needs of the society is hardly occurred if knowledge needs is not passed through the deliberative discussing process among all networks which helps to figure out what is real need of the society. Knowledge aiming to respond only one question without the linkage with others would lead us to meet the failure of resources mobilization to generate the knowledge and social conflict on pesticide management. Moreover, such knowledge is not accepted among all networks leading to incompliance with the policies announced by the others.

5. Knowledge link to fill the knowledge gap

1) Respecting the other perspectives and accepting bounded rationality

The above implies that Thailand is still in the risk society caused by pesticide use if the gaps in both knowledge base and needs are not filled in. Respecting the other perspectives is recognized as key word to bring about the better pesticide management policy because it aims to generate the real needs of the society not individual one which finally leads to the ineffective management in optimizing the existing knowledge and in producing new knowledge with the concern on the possibility to achieve it. It implies that the constructive cooperation on pesticide management will not occur if there is no trust among all coalition networks.

2) Knowledge for collective learning process

To formulate the collective learning process for all networks with different values given to pesticide, the following knowledge is essential.

1) Process-oriented knowledge

Process-oriented knowledge focuses on how to transform knowledge into action which increases the awareness on pesticide among all stakeholders particularly decision makers and finally influences their decisions to announce the mechanisms for effective pesticide control. This knowledge is beyond the production of content such as toxicological data or health impacts. Instead, it moves towards knowledge transforming process which translates data into the appropriated form for public communication.

2) Practice-oriented knowledge

The process to generate knowledge for pesticide management in Thai society has to place more concern on how to utilize it in the real social context. To reach the practice-oriented knowledge, the types of knowledge entailing changes in pesticide policy and the limitation to achieve it under

the existing social context have to be defined by all stakeholders. This means knowledge could be more than the production of scientific evidences but it includes knowledge influencing the systematic thinking and practice of the people. The practice-oriented knowledge for pesticide management can be the policy mechanism on pesticide control empowering all stakeholders on how deal with official decision making process or the SWOT analysis of each solution for effective pesticide management.

3) The samples of knowledge link

The knowledge link for filling the gap found in knowledge base and knowledge need could be achieved through the below activities.

- Prioritizing data and knowledge
- Linking data and knowledge in many sources and transforming them into the appropriated form for supporting decision making and data using by all stakeholders
- Generating knowledge in response to the societal concerns not individual needs
- Giving importance to knowledge with holistic views not disintegrated knowledge confined within single dimension
- Emphasizing the process of knowledge construction which entail better public policy process

The samples of knowledge link leading to collective learning process among all sectors in the society are listed below

- **Response to critical events**

There are many critical events, such as problems with agricultural exports or the rejection of agricultural products as well as environmental or health crises arising from pesticide use. These events may be a good opportunity for knowledge links, as all stakeholders are required to solve the problem urgently.

- **Experimental exercise**

There is good potential in the ongoing process of IPM, which should be strengthened and supplemented by an Integrated Impact Assessment, so that the benefits and positive consequences of IPM processes are realised and disseminated.

- **Integrated planning tool**

Community planning, for example the "Community Master Plan Tool by Village Foundation", indicates a good possibility for utilizing knowledge in various aspects, such as health, environment, economic, and social in the participatory planning process. Another possibility is the development of Gross Domestic Happiness (GDH), particularly at the community level. With its holistic basis, the development process of GDH will be able to link the knowledge of various aspects.

- **Participatory Surveillance System**

The local people and the Tambon Administrative Organizations (TAOs) should be the core of a surveillance system that covers planting and harvesting to pesticide disposal and environmental restoration.

- **Hazard Analysis of Regulatory Loopholes**

This idea applies Total Quality Control as described in standard HACCP to the pesticide regulatory system. It will firstly focus on the street-level pesticide problems to explore and identify the loopholes and the Critical Control Points in the system that may cause hazards or problems in the field. Consequently, a roadmap for filling or bridging the gap and for system improvements will be proposed to strengthen policy mechanisms of the regulatory system.

- **Alternative Policy Development**

These multifactorial problems can not be solved by a single solution. Alternative policy development should provide a complete picture of various policy options. Moreover, the analysis of policy options should include the concept, content, elements, conditions, impacts, or consequences of each policy option.

These knowledge links could not be achieved without the deliberative policy process based on the value of "Living Healthily Together". This concept provides an opportunity for all networks to exchange their

perspectives and knowledge needs and to make use of all the relevant experience and understanding of health and environmental impacts caused by pesticides. This process may well propose healthier solutions than that limited to scientific evidence alone.

The constructive learning process among groups with different values will open their mind to other aspects and dimensions and lead to ways to form linkages with others. With the deliberative policy process, an integrated understanding of investment and actions from various social actors and outcomes on the various population groups is possible, and will help to deal with pesticide issues in ways that are more dynamic.

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Thailand has recognized the consequences of any development policies and has tried to assess their impacts to the people. This was initiated from the ecological concern, then to the individual human being and finally extended to cover the social impact and public domain. Health Impact Assessment (HIA) was firstly applied as a minor technical element in the Environmental Impact Assessment (EIA). As human centered development has been increasingly concerned in Thai society, the HIA has turned to be an attractive tool to reconcile the societal conflict in the midst of drastic economic development and the more risky world.

Applying Health Impact Assessment to promote Healthy Public Policy will be more effective with clear understanding of public policy processes. However, in the real world, public policy processes are multi-facets and less predictable. Analyzing public policy process becomes a significant challenge to HIA development for our healthier society

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